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WASHINGTON, D.C.

NOVEMBER, 1921

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By Colonel Fred H. Sargent

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INFANTRY JOURNAL

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A Small Beginning

DURING the past summer something over eleven thousand of the young men of this country voluntarily spent a month in one or another of the military training camps established throughout the United States.

Nearly ten times that number applied for permission to do so but could not be accepted for want of funds to provide for them.

At the end of the month these thousands of future citizens scattered to their homes, and hundreds of letters from them and from their parents bear ample testimony to the satisfaction derived from the experience.

All of this received scant notice from the general public.

To most of our people this is an old story. There are few in this country today who cannot tell you in general what that month of military training meant to those thousands of youngsters—the physical benefit, the ideas of orderliness, of discipline, and of team-

work—all of this is old stuff to the millions in our country who have not forgotten what the training camps did for our manhood during the war.

However, there are few who can tell you the real significance of last summer's work—what it meant for the 11,000 youngsters to sacrifice a month of their vacation period to voluntary military training, what it means, not for them, but for the country.

Only a few can tell you this because only a few have read aright the outstanding lesson of the war.

That lesson does not have to do with the training of millions of men, with the building of a great military machine, with the winning of a war—wonderful as all of that may have been.

On the contrary, it has to do with the return of those millions to the peaceful pursuits of civil life.

It has to do with the birth and growth and purpose of a great patriotic order, an order that has already taken its place in the front rank of American citizenship and one that will grow in usefulness as it has in size.

The birth of that order had its inspiration in the associations and experience of the war,

in the leveling contact of effort in which individual worth alone counted, in the shoulder-to-shoulder grind that introduced men to each other and to the principles of genuine democracy.

The result was an accomplishment that enabled the United States to take its place in the forefront of the nations of the world and, incidentally, that enabled those millions of men to find themselves and to take their proper places in the life of their country.

Whatever their military training and experience may have meant to these men in other ways counts for little when compared with the importance of their awakening to the meaning of citizenship.

Whatever they may have done for the country in war will be dwarfed in future history by what they will do for the country in the years of peace that we hope may follow.

Before the war these men were merely potential Americans, Americans in the making. Today they are Americans in the fullest and truest sense. Their military training and experience brought about the transformation. What it did for them was to give them a clean-cut idea of what discipline and disci-

plined teamwork means to a democratic society such as ours.

Nothing more was needed. Nothing more will ever be needed in this country. We of the United States take kindly to democratic principles once we have recognized them; we like democratic association once the ice is broken.

It took a war to break the ice for us and to bring our millions to a realization of what democratic citizenship means. Perhaps that is one thing that we may rightly place to the credit of war. Be that as it may, we cannot indulge ourselves in war for the purpose of promoting our citizenship.

In all the years that happily intervene between wars, we must depend upon something else to do this for us. That something must be the individual and collective conscience of our people, and it must do for them from year to year what war does for them periodically.

And so it means much for the quality of our future citizenship—that little vanguard of 11,000 youngsters who voluntarily passed through the training camps of the past summer.

For one thing, it means a natural awaken-

ing to the obligations of citizenship, not only on their part but on the part of the parents who permitted them to undergo the training.

For another thing, it means the birth of a new consciousness, an awakened feeling of responsibility for the defense of the nation, an appreciation of the obligation to prepare for a part in that defense.

It is perhaps a small beginning, but it is a beginning that may spell much for the future of the country.

Prolong the period of training from one month to three, and it will represent a genuine defensive asset to the country.

Multiply last summer's camps by fifty each year, and they will include the annual addition to our citizenship.

The results?

The first result would be voluntary universal military training—the essence of democratic patriotism.

The next result would be an awakened citizenry.

The final result would be a nation that need fear no evil of either peace or war.

A small beginning, but——

The Enlisted Apprentice

By Major B. G. Chynoweth, Infantry

MANY centuries ago, the boy who would become a soldier enlisted himself in the company of a professional captain and went away to the wars. He learned his trade by doing the things that he saw others doing. He was drilled and ordered about. If he was ambitious and favored, he received special instructions from masters. If able and fortunate, he rose to become a master of the sword or the pike, or even to his own command. At the same time, the less restless brother remained at home to learn a trade. He too apprenticed himself to a professional and learned by doing. If able and ambitious, he mastered his trade and established his own practice. These two, the soldier and the mechanic, have come together through the ages. A few of them attained to the heights of success. Since we are concerned with success, it is the progress of these few that interests us most. How did they make their ways? How can they elevate themselves today?

We are very much concerned today that men should be able to rise in station according to their abilities to accomplish. In every trade or profession, we gain strength and freshness only through the free growth of the individuals. The young man who is restrained in his own natural expansion becomes an active agent for the promotion of class antagonism. The one who achieves his own success exerts a cementing influence. We should allow our young men to succeed. We should stimulate their success. Uniform training will give them all a start in the right direction. Boys start in life, however, with different potentialities. How can the individual go beyond? Part of his necessary guidance will come through the routine relationships of life. He can expand fully to his own capacity, however, only through self-imposed efforts. Books are inevitable. Men elevate themselves through their thoughts. Leaders in all fields are realizing that the problems which now confront us can be solved only through education. This process is relative. The best education is for the few. These few, however, are awakening to the fact that they cannot safely neglect providing the remaining masses with the benefits of their own learning. There must be advantages for every man to use to the limits of his energies. We discipline the bodies of men, but we must also discipline their minds. It is not enough to gain agreement during working hours. We must reach men in their free moments and influence their thoughts. There should be leadership over idle minds.

Our profession is as old as the ages. Because of its age and its great works, it has brought us a wealth of tradition. Here and there, we have been misled by these traditions in adherence to their empty forms. At such times the military art becomes stilted. But it is too great an art to be restrained and it must always burst its bonds. It must be free, and yet we must learn. There was a time, not long past, when we worshiped "practical soldiering." We recently learned anew that in our profession, as in all others, there must be education.

With the swing of the pendulum, the hard-boiled, practical officer yielded before the student. We scan books with feverish interest. Life is one long series of schools. One often wonders if we have not swung beyond the balance between technique and inspiration. At any rate, it is all for the officer. We waste no time demanding study from the enlisted man. He remains the apprentice. As in former times, he continues to learn by being drilled and ordered about. In his free moments, his private thoughts, how do we concern ourselves? Perhaps not at all. At least not by education.

How can the beginners gain success? The mechanic of today learns by apprenticeship, by practical work. But also, if he is ambitious, he learns from books. He takes courses in correspondence schools, he studies his technical journals, or he delves into libraries. He finds his trade well covered in letters and there is full opportunity for him to learn it so well as to stand up above his fellow workers. In addition to being able to do things, he acquires that distinctive ability to talk about his trade, to visualize its problems and its future, and to advance ideas. These things make him of value to those who are looking for talent. He rises, and with his advancement he continues to devote free hours to his self-education. We detest "bookish" men. Nevertheless we do owe much to books. These men rise through study, and in success they bring success to their leaders.

One might say, perhaps, that all men are not ambitious. It is so easy to think that the enlisted man and the mechanic are not of the "reading kind." We so often fail even to be curious about how these men employ spare time. There is no better way to a solution of this mystery than a visit to a great public library. The library should be of intense interest to the student of men. Here he may be surprised to find men of all classes, studying books of all sorts. If for each of these there are a hundred others wasting their moments, it does not matter. The important ones, the few who influence their fellows, are the ones who are seriously attempting to develop the creative cells in their human brains. Some of these are studying technical manuals. Others are deep in the imaginative delights of socialism, or even more radical ideas. We need not question what they read. The lesson that one can draw from the library is that the human mind is active, no matter to what class its owner belongs. The important deduction to be drawn is that we should use this activity. We should reach these active minds and lead them to think our thoughts. They should be educated, not by our enemies, but by ourselves. The active mind will always be working. It follows no routine or schedule. It knows no apprenticeship.

The mechanic can learn his trade apart from his daily work. The carpenter can broaden his understanding. The clerk can expand. But what of the soldier? There is no trade more susceptible of imaginative treatment than the trade of the soldier. Yet there is no trade in which the leaders make so little use of the native curiosity of the individual. The soldier remains an apprentice. His idle thoughts do not appear to interest us at all. Certain agencies provide him with books that help him to advance himself in the trades of civil life. We even detail officers to further his ambitions for civilian advancement. Why should we

not make greater use of books to teach him the trade of soldier? Why should we not attempt to lead these active minds into military fields instead of so supinely yielding the opportunity to the very ones who do most to discourage our own profession? There are active minds among our enlisted men. We cannot collect masses of men without including many of these curious ones, potential agents for good or for bad—men who might become leaders. Let them have free education, indeed, but encourage this expansion in the direction of our own needs. Let our men be military students as well as enlisted apprentices.

There are quite a few military books. We have not had as many as an active interest would appear to warrant, but the stimulation of the war and of the unsettled future should bring forth more. Such books as there are, however, give an indication of the direction of our thoughts. This indication is not entirely satisfactory. There are some books for company officers. The great majority are aimed at staff officers and especially at generals. The wise teaching that men should seek greatness in the attempt to serve the lowly appears to have been ignored. Apparently we look for greatness in imagining ourselves all to be generals. There has not been quite enough thought given to the problems of the enlisted man. Many an officer has been surprised to find his noncommissioned officers studying military works. It is pitiful to think how little there is of literature that is really aimed at these men. Some of them have been as interested in their profession and as proud of the name of soldier as our major generals. Why not have books for such as these? Books that will give them new ideas of the intricacies of their trade? Imaginative, inspiring books, that will stmulate their pride in service? Books that will give them our thoughts of themselves? It would be well worth while!

There have been many worthy efforts in this direction. There have been excellent books for the noncommissioned officers and privates, on such subjects as leadership, patrolling, shooting, courtesies, traditions, and methods generally. But these are too few. They are a mere start. Above all, there has not been enough use made of these. We have not cared enough about the matter. Yet we should be concerned to the utmost. This is a part of leadership. Leadership is not alone a matter of tactical handling. It is not routine, nor a matter of schedules. It is influence! It should seek to reach its mark in every possible way. We should study our men and impress them, at work and at play, in quarters and out, moulding them, assisting them. In our modern day, books can play a large part in such work. Free education should not be neglected.

There is no military I. C. S. There are no great public libraries filled with books for the N. C. O. We occupy communities apart. Therefore, like so many of our problems, this one is a matter for solution in our own military communities. The beginning is with the officer or enlisted man whose interest encourages him to write for the men. If the path is opened, there will be many of these. The final decision rests with the company commander. He is the real leader of the enlisted man and can reach him in peace and in war. The company commander is failing to make the most of his opportunity when he neglects to influence the thoughts of his

men outside of work hours. Each company can easily collect a library that will be of value to enlisted men. The effective leader can easily encourage the active minds to learn from these books. It will not be tiresome work. The officer who encourages his men to think and to advance ideas will automatically strengthen and broaden himself. We should not scorn these enlisted minds. Though uneducated, many of them will be sufficiently active to spur their leaders, if these really attempt to lead. If only a few men in each company take advantage of the company library, this will be a valuable agency, an effective leaven of thought. These few active minds will influence the whole. Among enlisted men, they will be educated.

Let us accept this as a problem. Our solution should provide, first of all, suitable cooperation between those who will write books and the company commanders who will place them on their shelves. This cooperation must not be an official matter. Education that is officially regulated would lose the greatest benefit, the freedom of the influence. It is a community problem. Our own community centers in the Infantry Association. Here is the place to start this work, if we deem it of importance. The association should encourage the production of good books for the enlisted man. It can assist, perhaps, in financing their publication. It can guide company commanders in their selection of books. Above all, it should constantly remind us that our greatest service, not only to our country but to ourselves as well, will come through continued study of our greatest asset, the enlisted man. The association is not a dominating agency. It is free, a representation of our combined interests. It is above all an agency for education. We must see that it influences, not only the education of officers, but also the self-education of the enlisted man.

The principle involved in this question can hardly be opposed. There remains only the execution, the detailed plans. The books at hand are imperfect and incomplete. It would be surprising if they were not. Their imperfections should merely inspire us to improve them. Some work has been done in this direction. On the whole, however, we are backward in this phase. The Infantry Association has recently prepared a small handbook for the enlisted man. Some officers have criticised this work. Others have praised it. Regardless of our opinions of this effort, why should we not use it as a starter? Let us appreciate the idea involved and lend our utmost interest to make its influence effective in our plans for the future. Encourage men to study this book and improve themselves as soldiers in free moments. Produce more books, some technical like this one, others more of an imaginative sort. Then if only a handful of men respond, we can be sure that the work is not wasted. Results will naturally be slow in appearing, but they will be of value in the end. All that we need for success is our own interest in the profession that we follow.

The military profession must maintain its morale. Propagandists are concentrating efforts, in this country, to make us relax. Our political leaders are unable to appeal to us directly to resist such attacks. We must assume the resistance ourselves. There is sufficient reason for us to devote more energy than ever before to our tasks. Our state has not disarmed. It is unlikely that future conditions will permit dis-

armament. It is extremely likely that we will be called upon, in our day, to face critical conflict. In any event we are engaged to be soldiers, not politicians. Our only honorable course is to turn deaf ears to the pacifists and to make our profession a matter of consuming interest, to ourselves and to the men whom we lead. Officers and men must be encouraged to use imagination in their work, for it is imagination that holds interest. They should study their fields. There is no profession that can be made more interesting to learn. On the other hand, there is no trade that can be made more repugnant than that of the soldier if he must comply with the demands of leaders who have not the interests of their subordinates at heart, and who are absorbed in their personal ambitions. We school our officers. Do not neglect the enlisted men. Let them be educated, too, if they so desire. If we lead properly there will be many that will desire. Inspire them!

During the war we lost our old noncommissioned officer group. They have become officers, or they are gone. Did we appreciate them fully? We must surely do so now. It was they who helped to make our tasks so easy before the war. It is their absence that so complicates matters now. We can breathe easily again only when their places are filled. This is no child's play. The old ones were interested, and they spent years in learning. The new ones must be encouraged to adopt the profession and to devote themselves to its service. Now is the time to commence the building of noncommissioned officers for the next war. Find the new men who will be suitable. Interest them and let them teach themselves. Give them all of the books that they can absorb. Their routine and their pay will but hold and train them for the moment. What they teach themselves in their free moments will not only train them but will also teach them to love their profession. That devotion is what we desire. Offer them our thoughts. Many will refuse these, but the few who accept will become our mainstays. We cannot be content with enlisted apprentices. We must have students of the trade of soldier.

[Major Chynoweth brings a new line of thought to many of our readers.

The company commanders of the Army will do well to read the article and take it to heart.

We must all realize that we have with us today very few of the old-time noncommissioned officers who learned the trade of soldiering through years of service. Men reach the grade of sergeant in their first enlistment, and it is no uncommon thing to see a man wearing the sergeant's chevrons in the first year of his service. These men must be trained and given a military education.

Company commanders will do well to take stock of their noncommissioned officer personnel and estimate how many of them measure up to the requirements; how many of them are taking advantage of the opportunities for increasing their store of military information.

Then examine yourself and see if you are doing everything you can to correct deficiencies. See if you are really encouraging your noncommissioned officers to help themselves.

We have a sheet in our office which shows every infantry company in the service, and whether or not they are

providing the INFANTRY JOURNAL on the table in the company reading room.

This sheet shows that there are still some companies of infantry that do not receive the JOURNAL. In these companies the company commander is not taking advantage of everything available for encouraging their men to increase their store of military knowledge.

In every trade and walk of life the men engaged in it read and study their trade paper. The INFANTRY JOURNAL is the trade journal of the Infantry, and should be made available for every infantryman.—EDITOR.]

Duty, Honor, Country

With all the advantages and disadvantages weighed in the balance, there remains a goodly margin in favor of the Army as a career for any educated gentleman adapted to the hardships incident to the profession of arms. As his forbears have suffered, he, too, may suffer from the rivalry, envy, and jealousy of other aspirants for place and power, but a strict adherence to the military code of ethics embraced in the simple motto—Duty, Honor, Country—will find him at the end with self-respect, escutcheon untarnished, and a consciousness of duty honorably rendered. The stings of envy and the shafts of calumny find no abiding place in the armor of men of that mould.—*Theodore Roosevelt.*

Talked to Death[1]

NOW that the War Department has seen fit to announce officially that to two Polish-American soldiers belongs the honor of capturing the first German prisoner taken by the United States forces in France, an ex-soldier may be permitted to tell the real story of that capture and its results. Looking back at the events of those early days with an uncensored eye they appear ludicrous in the extreme.

The two soldiers whom Washington has honored in official pronunciamento are Adam Blazikowski and John Cochanski, of Company C, 18th Infantry, First Division. The names themselves, spoken in strident voice, are enough to stop at least a German army corps. But the bold action of this pair caused a flow of talk that will not be forgotten in army circles.

I was touring the St. Mihiel salient in a 2½-ton G. M. C. limousine with an officer high up in the First Division. We were visiting scenes familiar to the members of the First in those early days in October, 1917. Suddenly the officer chuckled and said:

"Did you ever hear the story of the first prisoner captured by the Americans?"

I confessed my ignorance and waited patiently, not to say respectfully, for him to begin. What I am about to relate is given, then, on the authority of my *"compagnon de route."* I vouch for nothing.

"When the First Division first took over trenches in this sector," he began, "there was, as you well know, a shiver of expectancy that swept over all our forces then in France, from the farthest outpost clear back to General Headquarters. Had not the American Army, long heralded, at last taken its position alongside the French? For the first time in history soldiers of the new world were actually fighting on the battlefields of Europe.

"Everything that happened on our small front was therefore of the keenest interest to our higher officers. If a German shell fell into our sector, even by mistake, it was duly noted and discussed with the greatest seriousness around the high-ranking messes. If an airplane flew over, it was made the object of a long report, when more likely it was a French instead of a Boche. Not only was every move that we made closely watched by the higher-ups, but we received numerous visits from the French, who felt a great moral responsibility in thus exposing us to the enemy.

"Early one morning came the news that a prisoner had been captured. Breaking in on the slumbers of those at division headquarters this report had the effect of a bombshell. We vied with each other to get a first glimpse of the enemy, whom we saw in our mind's eye as a huge hairy brute, fierce as Hindenburg himself, the very picture of all that is denoted by the word Hun.

"The general, not to be outdone by any of his inferiors, issued an order that the prisoner be brought to division headquarters without delay so that he might question him personally. He first dashed off a hasty telegram to

[1] Arthur E. Hartzell in *American Legion Weekly.*

General Headquarters, boasting of the achievement of his troops.

"More than an hour passed by, which seemed a month. Plans were made for the prisoner's reception. The great barbed-wire cage which had been built when we first moved into the sector was prepared for its occupant. An interrogating officer was appointed, and he immediately set to work making up a list of questions ranging from the purely personal to those of high international politics and strategy, touching every subject under the sun except religion. These questions were to be shot at the prisoner in rapid-fire order so that he would surely trip himself up and let out some valuable information.

"After what seemed an interminable wait, there was seen approaching down the road a group of men in khaki. As they drew nearer we could make out about a dozen soldiers, all with bayonets fixed. The reception committee lined up, assuming an attitude of conquerors. At last *he* had arrived!

"In the center of a hollow square bristling with gleaming bayonets there came shuffling along an undersized, shriveled-up little man, scared within an inch of his life, casting furtive appealing glances first to one of his captors and then to another, evidently expecting any minute to be run through.

"After a short parley the enemy—for so this inoffensive and miserable looking creature must be called—was ushered into the G-2 offices for the questioning ordeal that awaited him. We all attended as spectators.

"His name was only learned after repeated questions, for he was so thoroughly nonplussed that he had almost forgotten it. Leonhard Hoffman he said it was, and he belonged to the landwehr. Because of his evident lack of fighting qualities he had been employed as a mail clerk and had been captured by one of our patrols as he was coming back to his company with the mail. Would the dreadful Americans kill him as he had been told they would? His eyes asked this question many times before his faltering voice could frame the words.

"The real questioning began. Our interrogating officer must have been a district attorney in private life, for he questioned him unmercifully. He asked him everything, from the name of his regiment to the innermost secrets of Hindenburg's plans. He asked him where the Kaiser was, what had been the strategy of the German 1917 campaign, etc., etc. The interrogator insisted that this poor half-wit should know the state of German internal politics, and he even quizzed him on the submarine campaign. Stupefaction took the place of fear in the prisoner's mind.

"It was some time before anyone thought to give our prize Jerry something to eat, which he devoured most greedily. He was then caged.

"Delegations of high-ranking officers began arriving before noon, and they kept coming all afternoon and long into the evening, all highly excited and unusually self-important. One would have thought we had captured the Kaiser himself.

"For the benefit of each and every delegation the 'enemy' was brought out and put through his paces. Each visiting officer insisted on asking at least one question, all of them entirely useless and utterly unintelligible to the prisoner.

"Finally the prisoner, utterly ex-

hausted, was sent back to the pen. And there, some time during the night when no one was watching him, he just lay down and died—literally talked to death. It was a tragic ending to our first war episode, but in war one touches lightly on such things. The next day an examination disclosed that the man had a wound in the head, inflicted possibly in the struggle that resulted in his capture. The impression has prevailed, nevertheless, among those of us who knew the circumstances that he was simply talked to death."

Composition of the Body

Dyestuffs is responsible for a statement with reference to the constituents of the human body expressed in a unique manner. Taking a man weighing 150 pounds and in normal health, we find that he will contain 54 ounces of phosphorus, which is enough to make 600,000 matches, enough fat to make a 15-pound candle, and his 22 pounds of carbon would make 180 dozen of lead pencils or carbons for a number of arc lamps. There is enough iron to produce a spike large enough to hold his weight, and there is approximately 3,500 cubic feet of gas, oxygen, hydrogen, and nitrogen, which would be worth nearly $4.50 for illuminating purposes. If you were to distill this man, the result would be 9½ gallons of water. The body also contains 2 ounces of lime, 20 spoonfuls of salt, and considerable quantities of starch, chloride of potassium, magnesium, sulphur, and hydrochloride acid.

It is an astonishing fact that a thousand eggs with their shells have the material essential to the making of a 150-pound man, in all detail from cerebral tissue to toe nails.

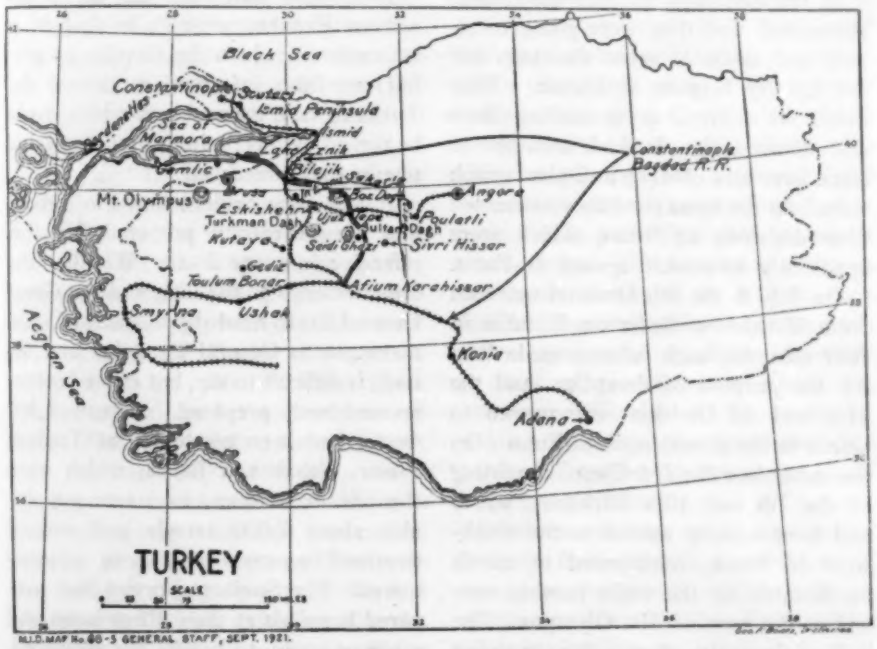
The Greek Offensive of July, 1921

By Major M. C. Shallenberger, U. S. A.

DURING the month of June the Greek staff had organized five regiments from reservists, who were used to replace the divisions which were holding defensive sectors and engaged in the duty of guarding the occupied area and line of communication work. The 11th Division had been withdrawn from the Ismid sector and moved to the Brusa sector, the 12th Division had been sent over from Turkish Thrace, having been relieved by two regiments of reservists. By this operation the Greek General Staff had available for the offensive eleven divisions which provided a combat force of 150,000 men, 271 guns, and 29 planes.

The Turkish force opposing the Greek troops consisted of fifteen known divisions and possibly two others, plus three cavalry divisions. These were organized into five groups of three divisions each, a total combatant force of 80,000 men and about 140 guns.

The Greek plan of action had for its objective the occupation of a line beyond the railway line running from Bilejik through Eske-Shehr to Afium Kara-Hissar. The Turks had so strongly fortified the defile running from Bilejik to In-Eunu that to attempt to again pass by that route was not attractive. The route through Kutahia was therefore decided upon. The



M.I.D. MAP No. 60-3 GENERAL STAFF, SEPT. 1921.

Greeks then purposely allowed the information to leak out that they were going to march from Ushak through Kutahia or Eske-Shehr. Newspaper reporters and foreign observers found this information everywhere, so that it soon became common all through the Orient that the Greeks were going to follow this route in the next offensive. The Turks made use of this information and commenced the fortification of Kutahia, facing their fortifications to resist the movement from Ushak.

In the first days of July the Greeks announced that they were going to attack and assemble seven divisions and the cavalry brigade at Ushak. They made no attempt at concealing them and allowed the Turkish aviators to come over and observe and photograph them. At the same time they assembled four divisions at Brusa, which were apparently to march against In-Eunu.

On July 8 the 9th Division marched from Ushak via Gediz on Kutahia in four columns, each column made long for the purpose of deception, and the 11th and 3d Divisions commenced to march in the direction of In-Eunu. On the same date the 3rd Corps, consisting of the 7th and 10th Divisions, which had been secretly moved to the southwest of Brusa, commenced to march on Kutahia by the trails passing over and to the west of Mt. Olympus. The bulk of the army—that is, the remaining six divisions and the Cavalry Brigade—were marched in two night marches from Ushak to Toulum Bonar. During this time the Turkish aviators were not allowed to approach the Greek lines, and all movement was kept secret. On July 10 the Greeks issued the first communique which announced the progress of columns moving north from Ushak and those moving east from Brusa. No mention was made of the other forces. On July 10 the 1st and 2nd Corps moved north from Toulum Bonar, having as their objective the left flank of the Turkish position which they were to take by envelopment, while the 3rd Corps from Brusa was to turn the Turkish right flank. On this same date the 12th and 4th Divisions marched against Afium Kara-Hissar. The Cavalry Brigade marched between the two forces.

It is thus seen that the operations against Kutahia were to be that of a maneuver in which the Greeks, by giving out false information, caused the Turks to take up positions which could be turned by their columns moving from unexpected directions.

It was very evident that the Greeks had very carefully prepared for this offensive in every detail. Whether the credit belongs to the king and the Great General Staff, headed by General Dousmanis, or to General Papoulos and his staff, is difficult to say, but every feature seemed well prepared. About 1,500 trucks had been assembled at Toulum Bonar, Ushak and Brusa, which were the advanced bases, to insure supply; also about 2,000 camels and several thousand ox-carts had been requisitioned. The Sanitary Service had prepared hospitals at these three bases and sanitary trains to handle the wounded. Every department was functioning calmly and well.

THE BATTLE OF KUTAHIA

The troops advanced against the Kutahia defenses without much resistance until the 14th, on which date the covering troops were encountered and real fighting commenced. Before this time,

however, columns marching against Afium Kara-Hissar found little resistance and occupied the town on the 13th. A small battle was fought on the 12th on the positions west of the town. When it was seen that little resistance was to be encountered the 12th Division did not enter the town but turned at once to the north, moving in general east of the railroad. The 4th Division occupied the town and remained there because the Turks attempted to counter-attack and retake the town, but were driven off and fled to the north. After that there was little action in that sector. The Cavalry Brigade moved to the right of the 12th Division and marched throughout the rest of the operations on its right flank.

On July 15 the left flank of the Turkish positions assaulted was attacked by the 1st and 2nd Corps with success; the 5th Division completely passed the flank and got a foothold on a commanding position well in rear. On the 16th the Turks attempted to drive back the 5th Division by a counter-attack made with three of their divisions. This counter-attack was repulsed only after very severe fighting in which the 5th Division had about a thousand casualties, but they remained masters of the position which completely turned the left side of the Turkish defenses. On the same day the 3rd Corps in an all-day battle captured the positions on the Turkish right and progressed in the direction of Kutahia. The divisions in front pressed the attack only lightly. Thus on the 16th the Turk found both of his flanks turned and decided to give up the whole of the position. He commenced the retirement of his entire force in the afternoon of that day, and by midnight the last of the Turkish troops had passed out of Kutahia. The 10th Greek Division entered the town the next day at noon, followed closely by the 9th Division.

As soon as it was seen that the Turkish lines had been turned, the 2nd Corps received orders to change direction and marched against Siedi Ghazi. This they commenced on the 17th.

The Turkish evacuation was carried out well. It was done very quickly and completely. Very few prisoners or matériel fell into Greek hands. The 3rd Corps captured four guns, and eight guns were abandoned by the Turks during the pursuit. It is not believed that the number of prisoners taken would reach a thousand. During the 15th and 16th between 2,500 and 3,000 Turkish wounded passed through Kutahia, while probably 1,000 passed by other routes. The Greek casualties in this battle amounted to a little over 3,000. Thus the battle casualties were about equal, with a slight advantage to the Greeks. However, during the retreat the Turkish soldiers took occasion to desert in great numbers. The town of Kutahia did not suffer at all from the operation.

While no decisive result was arrived at on the field of battle, a serious shock was given the morale of the Kemalist troops, for Kemal had assembled here his best divisions, which they thought by means of their strong position would stop the Greek troops. The Greeks took this position all too easily for the Turks to receive any credit in its defense, and their precipitous evacuation caused their organizations to break up, giving discontented soldiers an opportunity to run away.

The Greeks pursued the Turkish col-

umns as rapidly as possible, but only unimportant rearguard actions were fought until the entry into Eske-Shehr.

THE BATTLE OF ESKE-SHEHR

On the afternoon of July 19 the Greek 3rd Corps moved to the attack of the position in front of Eske-Shehr but found them unoccupied and entered the city that night at 8 o'clock. The town In-Eunu was occupied that afternoon about 4 p. m. Thus the whole Turkish garrison from that district had gone. The inhabitants stated that they had commenced the evacuation on July 17, the day of the fall of Kutahia. The last troops left Eske-Shehr by train at 5 p. m. on the 19th. On July 20 the 7th and 10th Divisions pushed on beyond the city and found that the hills surrounding the city still had Turks on them, and orders were given to the two divisions to take the heights on the following day so as to have a covering position. Thus, on the 21st, the 10th Division was prepared to attack the heights east of the city, between the railroad and the main road, but its attack was delayed until the afternoon because the Cavalry Brigade which arrived that morning was to take part on the right of the 10th Division and was not yet in position for attack. The 7th Division was awaiting the attack of the 10th Division before pushing farther up the railroad and up the Boz Dagh. The 9th Division had been assigned to the 3rd Corps as reserve and was halted a short distance west of the city. The Greek 1st Corps had crossed the Turkoman Dagh and was facing the heights of the Sultan Dagh. The Greek 2nd Corps was approaching Seidi Ghazi.

The Turks had evidently prepared to surprise the Greeks by a strong counter-offensive, hoping to entrap a large number in Eske-Shehr and roll up the balance of them in the mountainous country. The Turk had concentrated his entire force in the hills facing the Greek lines and commenced a strong counter-offensive all along this line, between 10 and 11 o'clock on this day, July 21. The Turkish troops were disposed as follows: The 1st Division, 3rd Caucasus, 11th Division and 3rd Cavalry Division to the north of Eske-Shehr at the foot of Boz Dagh; the 24th, 4th and 41st Divisions in the hills east of Eske-Shehr; the 61st, 23rd and 5th Caucasus Divisions on the Sultan Dagh, facing west; the 12th Corps in position west of Seidi Ghazi. The Greek staff counted two other divisions and two cavalry divisions as present, but their positions were unknown to the writer. They probably were in reserve. The strongest efforts were made against the Greek left which the Turk hoped to envelop and cut off the retreat in the direction of In-Eunu, and against the center which he wished to pierce, thereby cutting the only other route leading from Eske-Shehr.

The scheme was a bold but a good one and was a surprise to the Greeks. But the Turk unfortunately found the Greek troops well prepared for a fight, since they themselves were everywhere preparing to attack on that day, and consequently all troops were well in hand. The Turkish attack drove back the advanced detachments, but as soon as the Greek main forces were deployed the attack was everywhere checked and the Greeks themselves immediately took the offensive and soon had the Turks on the run. The Turk, in his endeavor to push through his part of the attack,

had committed all of his forces to the action, and when the Greeks began to push him back he seemed to have no reserves to cover his withdrawal. Thus late in the afternoon his lines completely gave way and his troops fled from the field in all directions and in great disorder. The Greek columns were immediately ordered to pursue, which they did all night long, so that by morning the Greeks had advanced their lines everywhere about 20 kilometers, the Turks having been unable to offer any resistance. The Greek lines were pushed forward the next day again without resistance until the present line was occupied, which was the line the Greeks wanted for the defense of that area.

The booty from this battle was considerable; forty guns were taken and over 5,000 prisoners. The Turkish killed and wounded were conservatively estimated at 5,000. The 23rd, 41st and 3rd Caucasus divisions suffered particularly severely. The Greek Cavalry Brigade found occasion to charge the 41st mounted and killed over 400 with the saber. The commander and staff of that division were captured. The Chief of Artillery of the 23rd Division was captured, together with 1,500 men from that division. The Turkish 11th Division attempted to move down the railway towards Eske-Shehr and was caught in flank by the artillery fire of the Greek 10th Division, which caused the Turkish 11th Division to withdraw without playing much of a part. The Turkish troops in front of the Greek 1st and 2nd Divisions suffered very heavy casualties, the extent of which is not exactly known.

The result of the whole battle was a very serious defeat for the Kemalist Army and gave the Greeks their much-desired opportunity to deal the Kemalists a good blow. The casualties on the Greek side were comparatively light, numbering a little over a thousand in all.

GENERAL RESULTS OF THE OFFENSIVE

On July 23 operations ceased, leaving the Greeks in possession of a strong line about 50 kilometers to the east of Eske-Shehr. This completed the operation which had Eske-Shehr for its final objective. The Greek lines now commence on the Sea of Marmora near Gemlik and extend to Lake Iznik Guel to Bilejik, thence following the heights east of the railroad and crest of Boz Dagh, crossing the railroad to Angora at Ujuz Tepe south along a series of heights about 140 kilometers east of Seidi Ghazi to Afium Kara-Hissar.

The Greeks captured in all fifty guns of various calibers, a large quantity of rifles and about 6,000 prisoners. This number will be probably increased when the final count is taken, since the number of prisoners and deserters was increasing daily and pieces of artillery were being found abandoned in various places.

The most important result was a serious blow dealt to the prestige of the Kemalist movement and to the morale of his troops. His army, which had been so much vaunted by the French and Italian press, was unable to offer any serious resistance to the Greek troops. When one considers the rapidity of the Greek advance one cannot help but admit that the Greek movement was rather brilliant. The various strongholds of the Kemalists fell in very rapid succession. For example, the real movement commenced on July

10; on July 13 Afium Kara-Hissar fell; on July 17 Kutahia fell; on July 19 Eske-Shehr fell; on July 21 the entire Kemalist army was given a decisive defeat. Thus in eleven days all the Kemalists' strongholds had fallen and the Greek troops had made an advance of 200 kilometers by the shortest line.

The remnants of the Kemalist Army were concentrating at Sevri-Hissar and in the heights north of the railroads. The next real line of defense which is the defense for Angora is that of Poulatli, behind the Sakaria River. From airplane reconnaissance and other sources it would seem that Kemal has there about 40,000 men, which is what remains of his army of 80,000 at the commencement of operations.

OBSERVATIONS

The most striking feature of the operations was the mobility of the Greek divisions and their great marching powers. The Greek divisions were about 13,000 strong, but all of their transportation was so arranged that no roads were necessary for their advance. All of the divisional transportation was on the backs of burrows, mules or camels. By this means the divisions were able to march and maneuver over mountain ranges and in places which seemed incredible; for example, the 7th Division, which became the left flank division, throughout its entire march on Eske-Shehr of over 300 kilometers by the map but actually over 400 kilometers, never had a road worthy of name, and many times the division would have to pass in single file over the trails. In spite of these difficulties, it was always in its place and even in advance of the line. I myself on July 19 saw this division advance 50 kilometers in the face of the enemy. Other divisions such as the 12th made remarkable records in marching, but I did not personally witness them.

It was by means of the mobility of its divisions that the Greeks were always able to envelop or outflank the Turks, and the Turks were so afraid of their line of retreat that the least threat at it always caused them to give way.

Both sides evidenced good fighting qualities in battle. The Greeks always attacked with great zeal. The Turk also showed every evidence of being a very brave and clean fighter. The greatest fault of the Kemalist Army was its lack of real organization. There seemed to be no bottom to it.

The artillery did not play such an important part in this operation. Only at Kutahia was the fighting in prepared positions; at all other places the fighting was in the open and was generally the fight of the infantryman. The Kemalist artillery appeared to me to shoot better than that of the Greek, but they seemed to shoot sparingly as if they did not have a plentiful supply of ammunition. Outside of Kutahia the Greek heavy artillery never arrived in time to take a real part in engagements. Artillery fighting was fought with the mountain artillery and such field artillery as would arrive in time.

The fighting seemed to conform exactly to the principles of our training before the World War. When objectives had been assigned to units plenty of initiative was allowed to the commanders. The importance of commanders being near the front was very apparent; the distances and difficulties of communication made it impossible

for commanders far in the rear to take advantage of the rapidly changing situation. Only the commanders who stayed close to their troops were able to advance rapidly. This feature also showed the importance of small and active staffs with all units. Only simple orders had to be given, but they had to be given quickly and clearly. The division and corps commanders practically lived in their automobiles, and when at a halt their headquarters consisted simply of a few tables in a house or tent on which to spread out their maps and write their orders. Typewriters were practically unseen. Red tape did not exist.

In general it may be said that the services did their part satisfactorily. The Sanitary Service had to do its business in the open with simple field equipment but seemed to be as good as could be expected; the most difficult feature was the transportation of the wounded over the long and poor roads in trucks.

The food supply was very simple, since the Greek soldier seems to get along on very little. Bread was practically the only thing sent up from the rear. The regiments and divisions drove herds of sheep, goats and cattle behind their columns; thus bread and meat was the ration, but it seemed to be all that these soldiers required.

The Ammunition Service, which was handled by the artillery, was maintained from the base to the corps by trucks. Each corps and division had a large train of mules and camels which carried the reserve supply for their units. At no time were the Greeks ever lacking in the supply of ammunition, as these trains were always on the spot.

The conduct of the Greek troops toward the inhabitants and the Turkish prisoners was very proper. They had received orders at the commencement of operations to conduct themselves in that manner, and I neither saw nor heard of any cases of cruelty. The conduct of the Kemalist Army, also, was as good as could be expected. The Turkish inhabitants, to my surprise, greeted the Greek troops in a very friendly and hospitable manner. They had been told that they would be massacred and were at first frightened, but as soon as they found this was not to be the case they apparently seemed glad of the Greek occupation, or, rather, they were glad that the Kemalists had gone. It seems that the Kemalist occupation had been rather severe on the Turkish as well as the Christian population. The Kemalists continually were demanding money, clothes, houses, men and everything until the peasants were sick of it all. The expression of this sentiment was heard not in a few instances only but in so many that one could not but be convinced of its sincerity. The Greek soldiers were required to pay for everything they took, and when it was found that this was the case, all shops and stores were immediately opened and goods appeared from all manner of places and a lively business ensued.

On the China Coast[1]

IT MUST BE that not a few of the Army have recalled to mind that the United States maintains a small force of doughboys in the land of the slant-eyed Celestial, and wondered what service on the China coast was like.

The beginnings of the United States China Expedition (that is, its high-sounding designation) date from early in 1912 when one battalion of the 15th Infantry arrived for duty, having been dispatched by the War Department in accordance with the agreement whereby the United States undertook to do its share in the necessary work of maintaining the provisions of Article 9 of the Protocol of 1901 between China and the Allied Powers, to which our government was a signatory.

This protocol was the one which concluded the Boxer Rebellion of 1900, and Article 9 thereof gave to the Allied Powers the right to station at certain places in China detachments of their troops for the purpose of insuring that rail communication between Peking, the capital, and the sea should always be open. As you will recall, the most widely heralded incident of the Boxer affair was the siege of the legations at Peking. Naturally when it came to drawing up protocols adequate provisions were made whereby the respective governments were accorded the right to use military means to insure in future that a second siege of the legations should be a difficult thing.

The United States did not at once avail itself of this right. It was not until 1911 when, on account of the revolution and consequent overthrow of the Manchu Dynasty, when no one could tell what might happen, that in response to urgent representations on the part of our ministers at Peking, one battalion of infantry was ordered for service in China under the orders of the minister.

On January 18, 1912, the 1st Battalion, 15th Infantry, landed at Chinwangtao. On March 17 regimental headquarters and the 3rd Battalion, 15th Infantry, disembarked at Taku Bar. On August 20, the 2nd Battalion was organized from the two battalions already present, as provided for in the regulations issued under authority of the National Defense Act of June 3, 1916. The expedition now consists of the 15th Infantry and detachments of the Medical Department, Quartermaster and Signal Corps.

Peking is more than a hundred miles from the sea proper, and 80 miles from Tientsin at the head of steamship navigation on the Hai Ho. The large steamers, the transpacific vessels, anchor off Taku Bar at the mouth of the Hai Ho, transferring their cargo by lighter direct to Tientsin or to the railway at Tangku. It was off Taku Bar that the ships carrying the Relief Expedition in 1900 anchored and discharged their passengers and freight, and here it would be that ships would come in the event of future disturbances of such magnitude as to bring a relief expedition. The only other port to be considered is that at Chinwangtao, more than twice the distance from Peking.

[1]By an officer of the China Expeditionary Force.

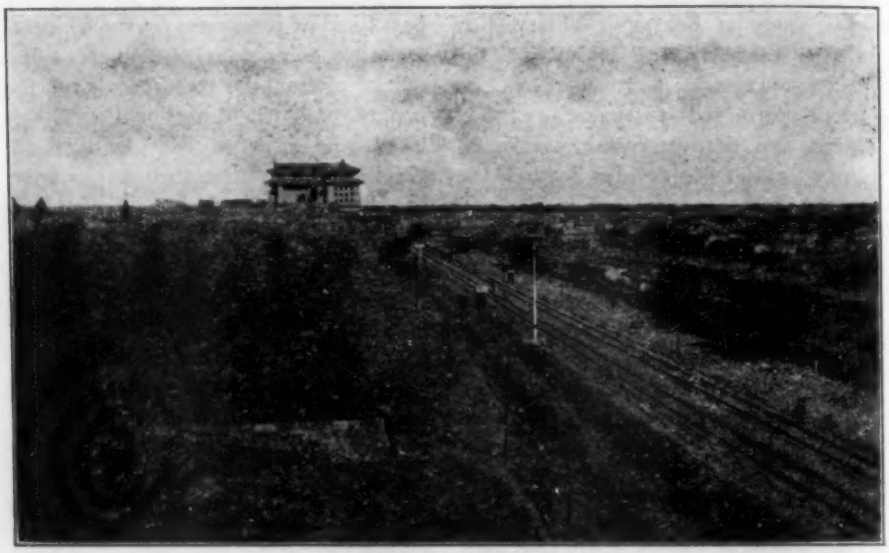
The railway from Peking to Chinwangtao was originally divided into sections which were allotted to France, United States, England, Japan, and Germany. Each country was to be responsible that open communication was maintained through its section, but the steps taken to accomplish this were left to the decision of the particular power. This arrangement was made by the military commanders stationed at Tientsin and approved by the diplomatic body at Peking. When China entered the World War against the Central Powers, Germany was no longer permitted to exercise treaty rights, and that part of the railroad allotted to her was divided between the United States and Japan. England and France had no objection to this, and in fact the United States only took a part of the section for the reason that England and France were in no position to undertake anything that might require the use of military means. The part taken over by the United States adjoined the section already allotted to her, and we now have more than 70 miles under our care. This section begins a few miles north of Tangku, the railway station for Taku Bar, and is important to the extent that it passes through Tangshan, where are located extensive railway shops and yards, as well as large coal mines of the Kailan Mining Administration. But it should be noted that our section lies north of Tangku, beyond the transfer point for steamships lying off Taku Bar, making us practically a negligible factor in the maintenance of open communication between Peking and the sea.

This last statement is true for the reason, as already pointed out, that Chinwangtao, the only port to be considered besides the anchorage off Taku, is used almost only by U. S. Army transports and coal carrying ships loading coal from Tangshan. Of course, if a situation contemplated by the provisions of the protocol should arise, our forces could, and undoubtedly would, be moved to some point of more strategic value in the accomplishment of the mission.

The Americans are by all odds the best liked of foreigners by the Chinese, and that holds whether you mean the official classes, the tradespeople, or the coolies. Go where you will in North China and disclose your identity as a "Mei kuo jen"—American, a man from the Beautiful Country—and you are sure of being well received. This is the result of two decades of fair dealing, of meeting the Chinese more than half way, and there is no reason now to say that the friendly relations between the two countries will not continue to grow and enlarge.

To go back to the discussion of the possible use of troops, it might be interesting to relate briefly how the "war" of 1920 between the Anfus and Anti-Anfus affected the American troops. It was last summer when certain Chinese generals, some of them at least aching for more power for themselves, decided that it was a good time to oust the Anfu regime then in power at Peking, especially as the Anfus had been bitterly assailed by the students and Young China leaders. So, late in June Gen. Chang Tso-lin began the movement of his divisions, the 27th and 28th, from the vicinity of Mukden towards Peking, and Gen. Esao Kun, Tuchun or Military Governor of the province of Chili (in

which are located Peking and Tientsin), started his forces under Gen. Wu Pei Fu northward from Paoting-fu toward Peking. General Chang's troops all moved down over the Peking-Mukden Railway, via Chinwangtao and Tientsin. Very soon the single track was so blockaded, the yards at the various stations so jammed, that the ordinary three-hour run between Tientsin and the capital required ten to fourteen hours to make. Attempts at burning bridges were made, occasionally a few rails were pulled up, and things became so disagreeable that the military commanders decided to run every other day, or as often as conditions seemed to demand, an "allied military special" between Tientsin and Peking. This train carried no passengers except small detachments of American, French, English and Japanese troops. No interference was made with the operations of either the Anfu troops or those of the Fengtien-Chili faction, the train simply made the trip as expeditiously as possible, thus demonstrating that the line was "open." It can be understood from this that the foreign powers have no concern under the treaty rights of the Protocol of 1901 as to who uses the road, or how, or for what purpose, so long as trains carrying the legations and impedimenta could be operated.



On the Peking-Mukden Railway.

Nor must it be understood that the foreign powers have any authority to operate or to interfere in the operation of the road in ordinary times. And again, American troops are not in China to protect private property and would not be used in case of strikes, riots, etc.

Briefly, such are the circumstances under which American troops are on duty in China. Our life, work, and play are in most ways quite like that of regiments stationed in or near an

American city. The expedition, except two companies at Tangshan, is at Tientsin, the port of entry for Peking and the most important commercial and industrial city of North China.

Situated in the same latitude as Philadelphia, on the Hai Ho, some 40 miles from the sea, and on a vast and almost treeless alluvial plain, the temperature and climatic conditions run the range. The summers are hot and what rain there is usually comes then; the winters, while not extremely frigid, are continuously cold, making ice skating the most popular of winter sports. The absence of trees and grass, together with the nature of the soil, combine with the spring winds to make one of the notable features of North China life—a dust storm.

The foreigner arriving in Tientsin is not quite sure whether he is in a Chinese city or only in a city where a part of the population is Chinese. Leaving the railway station, he sees as many Fords as line up outside the station in his home town. He hears the clang of the tramcar bell just as he often has on Main Street. The buildings do not look very Chinese, and, if he has been to Europe, remind him more of the architecture he knew there. About the only Chinese looking things will be the 'ricksha coolies, and they will look considerably less like a Chinaman than the laundryman he delighted to tease in his boyhood days back "homeside." But he will very quickly appreciate that he is one of a cosmopolitan crowd, for the Chinaman is not the only Oriental on the scene; Japs are in evidence; Hindus in their own latest styles stand severely about; Annamite soldiers, scowling with French authority behind them, flippantly pace the platform; and trying to guess the nationality of every white person he meets would soon exhaust the average man's vocabulary of races and countries.

For Tientsin is a city of concessions. The British, French, Italians, Japanese and Belgians all have concessions where most of their nationals reside and which are governed without any reference to the Chinese. Then there are the concessions formerly held by Germany, Austria and Russia, and these are still in appearance very much like little patches of the home country although now administered and policed by the Chinese. For a short time more than half a century ago the United States possessed a concession here, but then, as now, it was not our policy to hold such ownership. American concerns and American families are found scattered in various parts of the city, as indeed are those of other nationalties.

The expedition is quartered in a leased compound located in the former German concession, and the officers live all over the city, wherever houses are available. There are no public quarters provided, and it is "maskee" to the military authorities where an officer resides. The housing situation has been a distressing problem in Tientsin, as elsewhere, and finally to locate a dwelling within a twenty-minute 'ricksha run of the barracks, only to learn that the renter must get his own electric light fixtures, see about the water connections, about everything, in short, is enough to make the army officer wish he had never asked for the China station.

But wait until next week—or two of them—or whenever it is that they get

the fixtures up, the water connected, and he agrees with Kipling that only a fool tries to hurry the East.

Yet he will not learn and will waste much breath and lose most of his patience in trying to have a Chinaman do something more quickly than friend John has any intention of doing it. I know people who are worrying themselves to an early end by attempting to give the Chinese new characteristics in the short space of a two-year tour.

That is one of the fascinations of the East, its unlikeness in fundamental rules of thought and action. It is different. Not only do the Chinese write in what to us seems a backward movement, but they make locks that unlock when you think you are locking them, and screws that won't screw when you turn them properly; on the streets the men wear skirt effects (and many of them queues still), and the women, especially the lower classes, wear trousers, while at home the upper-class women go about in pants. I do not know how the Italians play mora, but the Chinese play it very queerly—to an American, at any rate. It is an exceedingly popular game around the restaurant table and such places. The queer part is that the loser must drink. There is, however, no rule that prohibits the winner from drinking too.

Of course, there are many things like ours, and I might mention two—the use of powder or rouge and the adoring of small feet when possessed by a woman. A Chinese woman can daub the face up as roseately as any American woman, and in the matter of small feet there is no comparison. In fact, one soon becomes cured of admiring small feet when daily presented the sight of the fashion carried to the extreme. Happily this practice is not much followed now.

But we will leave the peculiarities of the Chinese to the investigations and cogitations of the reader who may come some day to Cathay where they may be observed first hand. For the person in the military service these peculiarities and characteristics will be largely a matter of household concern. The American resident in Tientsin, or any of the larger treaty ports, lives among his own kind. Not including the military contingent there are 350 or 400 Americans in or close around Tientsin; of Britishers there are more than that number. For the athletic man or woman few places can excel Tientsin—golf, tennis, baseball, cricket, rowing, badminton, ice skating, polo, horse racing, motoring—all have their part in occidentalizing the life of foreigners.

It seems to me that no description of life or conditions in China is complete without a few words on "exchange." Yet there are few things about which more could be said and less meant; anything said here may be correct and may not be, but then no one else knows much more about it. Winning money at poker is easy when compared to winning it by playing with exchange. American troops are paid in gold, which is at the present time worth slightly more than two Chinese dollars. A few years ago U. S. gold was worth more than two and a half Mexican and only a little more than a year ago a gold dollar bought only 75 or 80 cents of Chinese money. After you have got your gold converted into something readily negotiable your troubles with "big money" and "little money" begin. I have had this ex-

plained to me a number of times, but from experience I should say that, briefly, when you pay out you must use "big money" and when you get money in, it usually is "little money," which, remembering that the former is worth more than the latter, explains the situation.

Many of the pleasant and interesting things of duty in North China I have not touched upon; the officer interested has only to talk a few minutes with one who has served on the China coast to make up his mind that his next station will be among the people of the oldest of nations, in the delightful city by the junction of the Hai Ho and the Grand Canal, the chief outpost of that wonderful and fascinating capital, Peking.

I

Indoctrination

A doctrine may be defined as a general policy outlined by superior authority and communicated to subordinates as a guide which enables them to predict the probable wishes of their superior in cases where a definite statement of those wishes is not available.

The subordinates are "indoctrinated" when they have absorbed the doctrine so completely that they apply it instinctively in any given situation where they are obliged to look to it for guidance. It was understood in the Prussian armies of 1866 and 1870 that no order was to be blindly obeyed unless the superior was actually present, and therefore cognizant of the situation at the time it was received. If this was not the case, the recipient was to use his own judgment and act as he believed his superior would have directed him to do had the superior been aware how matters stood.

The Elements of War and the Application of Tactical Principles[1]

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THE lessons of the World War, due to the fact that it included a long period of stabilized warfare, are sometimes misinterpreted. There has been a tendency to deduce from that great conflict an entirely new system of strategy and tactics. It may be shown, however, that the elements of war, strategy and the principles of tactics were the same in the World War as in preceding wars. It is only the application of tactical principles or methods of combat that show modification and change. These latter have always changed with progress in the science of war.

It is confusing and a little unfair to refer to "unchanging elements of war, tactical principles," etc., without defining these technical terms. This lack of definitions has led to misinterpretations of lessons to be learned from the World War and other great conflicts.

War is the final argument between governments, the crucial test applied to military organizations and the decisive factor responsible for the end and beginning of many nations.

The elements of war are only four in number: man, movement, weapons, protection.

In man, we have the essential human factor in war. He constitutes the leader and the led. Due to his planning and organizations, modern war has developed from the ancient individual conflicts between primitive men. Man's physical strength has remained practically constant from the earliest time to the present day, in spite of traditions concerning mighty men of old. Primitive nations existing in various parts of the world today are seldom superior or even equal in physique to the civilized races. Throughout the ages the main characteristic of the foot soldier has been mobility and the fact that he carries certain equipment and weapons upon his person. Man's physical strength sets a definite limit to his load which cannot exceed one-third of the soldier's weight without seriously reducing his personal mobility and activity in campaign and battle. The last and most important factor dealing with man as considered from the military standpoint is the question of morale. Man is essentially temperamental. This factor is variously influenced by *esprit de corps*, patriotism, fanaticism, etc., but below all is the basic temperament which exhibits enthusiasm or depression, courage or cowardice, and is a vital factor toward victory or defeat. It is this quality, morale, which enables soldiers in one campaign to endure hardships, privation and suffering without murmur while other forces well fed and equipped may yield with only formal resistance. Morale is the great mer-

[1]A lecture delivered to the Field Officers' Class.

curial power in all armies, a factor that may be developed to the maximum by appealing to certain phases of the soldier's character and when supplemented by training produces a homogeneous force capable of overwhelming men of the same race and apparently the same quality. A historical example of this is found in the troops led by Oliver Cromwell.

The second element of war—movement—includes all phases of strategy, tactics, transport and communication. Without movement it is impossible for two individuals to fight. Contact is essential. They approach, maneuver, grapple and strike. These same details of movement, duplicated in forces increasing in numbers, include strategy, grand and minor tactics. As armies become larger and more complex this element of movement deals with the marching of troops, the use of animals, railroads and means of terrestial, aerial and marine transportation. All phases of movement known to the modern world are utilized in war.

Under weapons—the third element of war—is found the development of means of offense from battles in which teeth and claws were employed, through the primitive shock weapons such as club, knife and dagger to the modern sword and bayonet. Man is distinct from almost all other animals in his ability to strike at a distance. Primitive missile weapons such as the blow gun, arrows and spears have given way to firearms. All weapons, as an element of war, are included in two great classes—shock and missile. Their constant development has exerted a controlling influence in changing the application of tactical principles.

Under the fourth and last element of war—protection—is found the means that man has developed to guard himself from injury. In a conflict between two unarmed men, one opponent wards off the blows of his adversary, shields the vital parts of his body with his arms and seeks to avoid injury by personal agility. Skill in the protective use of offensive weapons is shown by the swordsman who shields himself by the use of his own blade. This element of protection is also found in protective covering, such as armor, which developed during the Middle Ages to an extent that seriously limited the mobility of the wearer. Fortifications grew from hastily constructed trenches and wooden stockades to elaborate forts strengthened by concrete and steel. The ancient canoe whose sides were protected with shields developed gradually into the heavily armored battleship. All the above are phases of the element of war —protection.

Brushing aside the mass of detail included within the science of war we find under the second element of war —movement—two great subdivisions which may be classified and defined as follows:

Strategy.—Battle planning designed to bring about a tactical encounter under the most favorable circumstances. In the theater of operations strategy involves the maneuvering of forces before contact with the enemy has been gained.

Tactics.—Which may be divided into two parts, grand tactics and minor tactics, both of which deal with mili-

tary operations designed to destroy the fighting strength of the enemy after contact has been gained.

Grand tactics deals with the operations of two or more of the various arms operating together as a coordinated team and in contact with the enemy. Grand tactics, therefore, deals with the operations of large forces. A study of ancient as well as recent wars divides conflicts in which the various arms were engaged into six general classifications—surprise, frontal attack, envelopment, penetration, turning movements and attrition. These six applications of grand tactics were used by Alexander and Caesar, they were used during the World War and they will be utilized until the end of history.

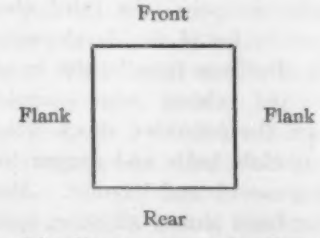
Minor tactics includes operations of units consisting exclusively or mainly of one arm. Under this heading is studied the tactics of each integral part of the great team that functions as a division, corps, army, etc. In infantry units minor tactics deals essentially with frontal attacks and the forces coming in personal contact with the enemy. Victory or defeat rests upon action in these relatively local engagements in which the greatest casualties are suffered and the forces engaged are subjected to the greatest strain upon physique and morale.

A study of grand and minor tactics, beginning with the dawn of history and extending down to the present time, indicates certain basic tactical principles that are utilized in the destruction of the fighting strength of an enemy. Every military operation embodies all or several of the following: mission, offensive, security, maneuver, team work, concentration, economy of force, and surprise. These eight basic tactical principles are as eternal as war. They were as true during the recent conflict in Europe as in the ancient battles when the loudest noise on the battlefield was the voice of man or animal.

From a study of the elements of war and particularly of the tactical principles just enumerated, three basic factors may be deduced that are common to all commands from individuals to the largest forces. Observance of these factors is essential to victory, to ignore any of them is to invite disaster.

1. *Mission.*—To destroy the fighting strength of the enemy. This may be produced by inflicting death or disabling wounds, by capture, destruction of morale, dispersion, cutting off supplies, etc.

2. *Basic formation.* — Every force from an individual soldier to the largest armies has a front, two flanks and a rear. This may be represented graphically by the following rectangle:



In this diagram may be found the entire subjects of security and information: the covering of the front by scouts and covering detachments, the protection of the flanks or maintenance of connection with adjacent units, the security of the rear and the lines of communication. An unexpected attack

upon flank or rear will usually be disastrous. An understanding that these vulnerable points are cared for by other forces does not relieve a commander who is surprised from charge of fault or negligence. Responsibility for front flanks and rear exists always and cannot be passed or evaded.

3. *Responsibility.*—Personal and inherent in the office of the commander. Regardless of adjacent troops, every commander is personally responsible for his own mission and zone of action or sector. Within this area the burden cannot be shifted to any subordinate who may have committed the entire force to disaster. Each commander is responsible directly to his own chief. There is no twilight zone between military success and failure. When a decision is sought and not attained the fault is placed definitely upon the commander concerned. His staff are merely assistants and cannot share this responsibility. History records only facts and results; excuses are soon forgotten.

While the elements of war and tactical principles have proven unchanging throughout the history of warfare, which begins with that of man, the application of tactical principles changes constantly. This fact is expressed in the statement found in military textbooks, that "tactics changes every few years." This refers to the methods of combat or the application of tactical principles which are becoming more and more complex due to change in development in weapons, means of communication, methods of observation and reconnaissance, means of transportation and general progress in military science. In ancient times a force of one thousand men operated within an area a few hundred yards square. Their formations and methods of combat were dictated by weapons then in use designed for shock action and assisted by missile weapons effective within a comparatively short distance. In such a command the human voice or a standard provided all the means of communication essential. In modern war an organization numbering one thousand men may operate over an area with a thousand yards frontage and twice that depth. Missile weapons have developed to such an extent that cover from observation and fire must be considered. The great war over which the troops are deployed has forced the development of complicated means of communication in order to make control and team work possible. The supply of ammunition and other essentials to modern warfare is effected by means of transportation unknown during the Napoleonic and preceding wars. The whole science of warfare has developed until the modern army is a complex organization which requires the highest degree of professional training both in the commissioned and enlisted personnel. Physical bravery must be controlled and directed by skill and moral courage. The demands on infantry and the price in casualties paid for victory were never greater.

Many widely varying deductions were announced in various military studies as "lessons of the World War." The conclusions, often stated with a finality meant to be conclusive, must be studied carefully before being accepted. Few individuals in the World

War saw many different phases of conflict. The experiences of most men were limited to more or less extended periods of warfare in which the value of a particular organization, weapon or method of fighting was emphasized. Such a man will conscientiously and truthfully report his experiences and then may make the natural error of drawing a sweeping lesson therefrom. A short distance away another and equally intelligent individual will have entirely different experiences from which he deduces different conclusions. Within the same sector, officers who served with combat companies, battalions or regiments in contact with the enemy may entertain radically different opinions with regard to methods of combat than officers who served in staff positions and whose experiences in contact with the enemy were limited to periodical visits. Most of the combat experiences of the American forces in France are included in the five months preceding the armistice. The casualties in infantry officers with companies, battalions, and regiments during this time were extremely heavy. The casualties among the staff officers of larger units during this period were very light. In studying lessons drawn from experiences of American troops in the World War, opinions of officers should be considered in connection with their position, responsibilities and point of view.

Further, the characteristics, temperament and individuality of the American in uniform must be considered. A tendency always exists to adopt organizations and methods of combat suited to various foreign nations without adapting the same to our own national individuality. The attitude which condemns everything American and favors all foreign ideas cannot too strongly be condemned. Equally unreasoning is the position which ignores everything foreign and considers American methods superior. The best lessons of the war are obtained by studying the experiences of foreign nations, then adopting and adapting so much as is valuable and suited to our own forces. The United States is not without military experience, and it is believed that the war has demonstrated that American methods of combat are basically sound. We are free from certain influences in foreign armies due to peculiar structure of society inherited from feudal days. The American soldier is also radically different from the German or other European enlisted man of peasant extraction. A study of American organizations and methods of combat must be based upon the American as an individual, upon our social structure and system of government. We must study all that is valuable from foreign sources and build up an American military policy which is second to none.

Turning now to some of the methods of combat or applications of tactical principles which have been modified by our experiences in the World War, it is well to consider the operations of infantry organizations and tactics within the area lying between the forward division artillery and the enemy. This area belongs to the infantry, is covered by infantry brigades, regiments and small subdivisions, and it is within this area that the enemy is met in personal conflict, that victory

or defeat results and where the vast majority of casualties occur.

The Infantry School limits its studies and instruction to problems occuring within this "Infantry Area." The infantry brigade is a tactical unit consisting of two regiments. Artillery and other supporting arms of the service may be attached to the infantry as required and then operate under the orders of the infantry brigade or other commander. The infantry regiment has developed from an organization consisting exclusively of riflemen to a self-contained unit including organizations designed to cope with most of the problems occurring within the infantry area. In fighting strength and composition the regiment is augmented by the addition of automatic rifles and machine guns. Opposing enemy agencies which cannot be overcome by small-arms fire are attacked by the one-pounder and light mortar, exceedingly effective weapons which are now integral parts of an infantry regiment. The area over which the colonel exercises control may be measured by thousands of yards in frontage and depth, and to cope with this difficult problem a headquarters company containing adequate intelligence and communications personnel has been provided.

The integrity of the rifle and other combat companies has been safeguarded by providing the battalion, regiment, brigade and division with an adequate administrative personnel, and every effort should be made to prevent the detailing of officers or men from the combat units for staff or other work less important than the actual defeat of the enemy on the front line.

Infantry attacks by a combination of fire and movement. The cornerstone of the American infantry attack is the rifle squad which consists of a corporal and seven men, one of whom is armed with an automatic rifle. Differing from the policy of certain European armies in which combat groups are based upon the automatic rifleman, the American rifle squad is organized upon the principle that the rifle is the most important weapon in war and the automatic rifle merely augments the fire power of the squad. For this reason we do not find the combat formation of the American squad more or less wedge shaped centered and upon the automatic rifleman. Our rifle squad attacks on a front of 40 yards, and each rifleman is trained to cover his advance with his own fire. The interval of 5 yards between skirmishers is considered the maximum permissible with fire effect and control of the squad and the minimum possible to secure the proper use of cover and individual action by the skirmisher.

The technique of an infantry attack varies constantly with the development of weapons and the progress of military science. The rifle squad includes the rifle, bayonet, automatic rifle, rifle grenades, and, when the situation warrants, hand grenades. In each squad two men are especially trained as scouts. Each squad is a team under direct charge of its leader, the corporal. All efforts to organize the rifle squad into an automatic team or to segregate the automatic rifles or other weapons into specialist groups are considered fundamentally in error and are condemned. Instead, it is be-

lieved that each man in the squad should be proficient in all weapons with which the squad is equipped so as to be mutually interchangeable.

The training of the rifleman is the most complicated and most important of all soldiers in war. He must be an expert with his own rifle, bayonet, with the hand and rifle grenade, in hand to hand fighting, scouting, and patrolling, in the tactics of the rifle squad, and must also be able to relieve the automatic rifleman or the squad leader when necessity demands.

The locating of targets within the infantry area has been greatly simplified by the development of tracer bullets which are at once unmistakable and effective. These bullets are utilized by the scouts and noncommissioned officers of rifle companies.

The great development of aerial and terrestrial observation has forced extended deployment in frontage and depth in order to secure relative invisibility and invulnerability. An infantry attack proceeds in waves, the front is covered by scouts and the successive waves advance in line of skirmishers or small columns as best suited to the terrain and tactical situation. In future wars we may expect practically all movements in rear of the line to be made under cover of darkness, fog, smoke, woods, or other cover. Formations designed to avoid shelled areas and secure minimum casualties from fire must be utilized. Intelligence personnel constituting the eyes and ears of the various commanders secure information of the enemy, the situation within the zone of action, and adjacent units. The communications personnel maintain communication with all elements of the command.

In the assault, while following a barrage, clearing woods and advancing through a smoke screen, fog, etc., the riflemen are trained to use "marching fire," in which each individual halts momentarily and fires an aimed shot from the shoulder whenever a target appears or straight to the front at every dozen or so paces of the advance. In this method of combining fire with movement the bayonet is fixed.

Within and including the brigade, the maintenance of connection with adjacent units is based upon the principle that every commander is responsible for his own flank. Further, he must keep his reserves intact and as strong as possible for use as the situation may require. For this reason small connecting units are sent out from the battalion, regimental and brigade reserves as required to maintain connection with adjacent forces or to cover the exposed flank as occasion requires. When connection between the brigades can no longer be maintained, the responsibility then rests with the division commanders. The use of composite liaison groups between brigades and smaller units is considered technically and tactically unsound.

Certain problems encountered within the infantry area are beyond the power of the weapons included within the regiment. For this reason it is necessary to call upon the artillery for accompanying guns and infantry batteries to cope with tanks, concrete emplacements, etc. These artillery units operate directly with and under the command of the infantry. Units

of engineers, chemical warfare service, tanks, etc., may also be attached to regimental or brigade commands for special missions. The utilizing of these various forces requires all infantry commanders to be familiar with the characteristics, powers and limitations of all auxiliary forces which may be placed at their disposal.

In order to secure unbroken team work throughout the brigade and with higher authority it has been considered essential to organize the brigade, regimental and battalion staffs based upon the four subdivisions found in the division and higher command, namely: personnel, intelligence, operations, and supply. These staff officers relieve the commanders concerned of a mass of detail but not of personal responsibility to higher authority.

March discipline and control of circulation were demonstrated during the World War as of crucial importance. This was especially emphasized by the fact that most movements must be made under cover of darkness. Only the right side of the road must be utilized by marching troops, the left side being clear for traffic in the opposite direction, passage of messengers, etc.

Throughout all instruction the unity of the infantry is emphasized. Every member of the regiment, whether he belongs to a rifle, machine gun, headquarters or other company, is an infantryman. The common error of applying this term to the rifleman is condemned.

The outstanding lessons to be drawn from our experiences in the World War are that infantry, to be successful, must be well trained, possess high morale, and adopt aggressive tactics. The ability of the individual soldier to handle the infantry weapons effectively is an assurance of victory. Personal courage without technical skill on the part of both officers and enlisted men merely increases the casualties. The American soldier constitutes some of the finest military material in the world. Properly trained and led he is invincible. His military training must be equal or superior to that of any possible enemy.

Team work between all arms of the service and within the infantry organization is essential. The infantry requires and should have full proportion of the best material raised. The policy of assigning undue proportions of mentally superior men to other arms of the service for so-called "technical" duties is fundamentally wrong, destructive of the *esprit de corps* of the infantry, fills graves and is prejudicial to ultimate victory. The strain upon his morale exceeds many fold that of any other branch of the service as the infantryman alone comes in contact with the enemy and is exposed to the strain of personal danger unsupported by horse or mechanism.

The American methods of combat as enunciated are considered basically sound and suited to the American soldier. The application of tactical principles as taught at the Infantry School are designed to develop and maintain a standard of training which will place the infantry of the United States Army on a level equal with or superior to that of any other nation.

Battleships and Airplanes

By Major Wm. T. Carpenter, Coast Artillery Corps

THE destruction of the late dreadnaught *Ostfriesland* and other ex-German warcraft by aerial bombs, at the hands of our army and navy fliers, was naturally followed by a considerable amount of aerial "hysteria" as indicated by the many one-sided comments in the press, which advocated the airplane as the major weapon of naval strength.

At the time of the recent bombing tests the public mind was in a most receptive mood for some new weapon that would give promise of greater economy in naval "preparedness" and, naturally, the spectacle in which the destruction of a battleship, costing many millions, was accomplished in a few minutes by a small number of comparatively inexpensive airplanes and bombs had an instantaneous and serious psychological effect upon the minds of those who perhaps have not given serious thought to the purposes of navies and battleships.

This battleship could have been destroyed at target practice just as surely and easily by a few rounds from the guns of a sister ship or those of a coast defense battery had she been anchored in the same defenseless condition near either for the purpose. A few torpedoes from a submarine or a few mines, properly placed, would have accomplished the same results at less cost.

Many writers were so impressed with the spectacular results of the tests as to at once decry the battleship as the backbone of our naval power, and were ready to scrap it in favor of the airplane. Such theories are naturally dangerous and, unless we soon return to a state of normalcy, they may seriously effect our construction program for big warships which already has suffered serious delays jeopardizing our naval position.

It is to be hoped that the recent publication of the report of the Joint Army and Navy Board will have the effect of counteracting some of the misleading publicity that these tests have received. Among the conclusions reached by this board of high ranking experts was the following:

(*g*) The battleship is still the backbone of the fleet and the bulwark of the nation's sea defense, and will so remain so long as the safe navigation of the sea for purposes of trade or transportation is vital to success in war.

(*h*) The airplane, like the submarine, destroyer and mine, has added to the dangers to which battleships are exposed, but has not made the battleship obsolete. The battleship still remains the greatest factor of naval strength.

There is no more reason at this time for abandoning the battleship as the mainstay of naval power because it is sinkable by aerial bombs, than there was some years ago when the submarine came into prominence with its torpedo, which has the same destructive power. As we remember, many of the early advocates of the submarine predicted that it spelled the doom of the battleship. The submarine, however, took its place as a fleet auxiliary, leaving the battleship supreme as the mistress of the seas, though it did extend naval

warfare to the two planes. These tests simply mark another step in naval progress and have ushered in the three-plane navy and in a manner that should be most convincing.

These tests, in which a submarine, a destroyer, a cruiser and finally the battleship were destroyed by aerial bombs, show conclusively that the hands of man cannot build a structure so strong, whether on land or sea or below the surface of either, that will not succumb to a sufficient charge of high explosives. A few of the 2,000-pound bombs that destroyed the *Ostfriesland,* if properly placed, would shake mountains and would practically destroy such cities as San Francisco or New York.

Several important lessons are to be learned from the results of these spectacular bombing tests, the first and most important among them being the apparent need of more airplanes of all military types as an essential part of our national defense or world insurance. We need them for coast defense and for the offensive and defensive use of our army should we again be called to war, and above all we need them for the offensive and defensive use of our navy in the event that our fleet should again put forth to maintain our rights and position on the high seas.

The next great lesson to be learned is that we need and must have a full complement of speedy airplane carriers to accompany the fleet and give it a due proportion of aerial strength. Flying machines are like birds—they cannot keep in the air indefinitely and at frequent intervals, or after the day's work, so to speak, they need a place to "roost" for rest and replenishment.

No naval fleet will now be complete or ready for war without a full complement of airplanes for scouting, bombing and other combat purposes, and in the future none will dare to put to sea in war time unless accompanied by its aircraft safely stowed in their carriers or mother ships which must needs be of the same, or greater, speed as that of the speediest surface craft.

As pointed out by the Joint Board, the use of aircraft will not reduce the cost of naval protection, but, on the other hand, it will increase the cost of the well-balanced fleet, for we may expect these immense aircraft carrier ships to equal in cost that of the modern battle cruiser. Then, again, we can expect at once the same rivalry in the quantity production of these carrier ships as we have witnessed in the past for the production of battleships and other warcraft.

The most important question confronting us today from the preparedness viewpoint is: What advantage will we now take of the lessons brought home to us by these tests? The whole world has been waiting the results of these tests—will we let others profit by them to our disadvantage?

In this country, the birthplace of the flying machine, we have robbed ourselves of our birthright and have drifted along in a state of aerial impotence, and this in the face of the aerial lessons of the greatest war of all times. Will we continue to drift in this state of indifference and concede the supremacy of the air to other and weaker nations, or will we at least provide an adequate naval air force? By all the rules of thumb or chance we should hold the aerial supremacy of the world today just as we hold the automotive suprem-

acy with our 9,000,000 or more automotive vehicles.

The possibilities of aircraft as an auxiliary in naval warfare have been understood by our naval authorities long before these tests, as shown by the efforts of the Navy Department to obtain appropriations for airplane carriers.

The tests were conducted in daylight, during good weather, to obtain which it was necessary to postpone them from time to time, and from low heights, which of course were well below the working limits of aircraft, but at which they would hardly operate against a live and maneuvering enemy target capable of firing back with anti-aircraft guns. They were most successful in every way and resulted as expected by those acquainted with the powers of high explosives. They speak well for the splendid training, accuracy and dependability of our fliers and have demonstrated all that they claimed beforehand as to their ability to hit and the powers of our bombs to destroy; but naturally the conditions of warfare and naval conflict were in no way approached, that is obvious.

Picture, if you will, two equal and well-balanced fleets at grips with each other in midocean or off the shores of a neutral power, where neither side would have the advantage of aerial reinforcements from its own shores, each with its battleships, cruisers, destroyers, submarines and other craft, protected to a more or less degree by smoke screens, and in addition, weather permitting, its aerial fleet let loose from the accompanying carrier ships—we would then have the real battle royal, in the three dimensions as it were.

The victory in such a case would then rest with the side, assuming numbers, types, tonnage, etc., to be equal, which had made the best preparation in time of peace—that is, the side with the best ships, destroyers, submarines, the best guns and armor, the most dangerous gas, the best airplanes, bombs and machine guns, and lastly, but in no wise least in importance, the most efficient and courageous officers and men in the air, on the surface and under the water. After the end of the aerial battle, during which, of course, bombs would be dropped with effect, the surviving airmen would then take a final and decisive hand in the surface fray if it were not already ended in favor of their side.

The victory, after all, is a matter of the survival of the fittest. Match, if you will, brawn against brawn as in the early days of naval history, steel against steel, bomb against bomb, or what not—bulldog courage, discipline, brains, common sense, and the knowledge of your weapon and how to use it by all ranks from top to bottom are the things that count in the death struggle between nations when equally prepared. In the prize ring we match men of equal weight; all other characteristics of the fighters are personal and incidental matters, but if nature has dealt alike with each contestant in the way of brains, courage, stamina and bodily dimensions, the battle will usually be decided by "condition" or physical preparedness.

We hope that wars are at an end, but when nations send their armies and navies forth to fight and settle their differences they should have them properly trained for the fray and should give them the best of weapons with which to enter the ring; nothing should be too good for the contestants

at this time. Present-day preparedness is a live, changing condition and at present requires not only guns, ships, supplies and other means of the past, but, in addition, aircraft of the different sorts with all their appendages.

In wars of the past, success on land has been attained by the combined land forces of the victor, the infantry arm forming the main body or the backbone of the forces, all other arms and services, such as artillery, cavalry, engineers, air forces, supply and transport, being contributary. Land operations overseas fail, of course, unless the sister service, the Navy, gains and holds command of the seas in order to maintain the lines of communication along which food and supplies must flow—as did the allied fleets in the late war.

In naval warfare the brunt of the fight has been borne by the "capital ship," or the "great ship," as it was called in the time of Henry V. It has always formed the backbone of naval forces, and naturally it has carried the bulk of the fighting seamen. The battleship class of the fleet, then, compares to the infantry body of the Army, and favorably so, since it always has its artillery at hand, which is not always the case with the infantry body. All other types or classes of seacraft such as battle cruisers, scout cruisers, gunboats, destroyers, submarines big and little, fuel ships, supply and repair ships, destroyer and submarine tenders or mother ships, hospital ships and transports, have their special missions and are but contributary to the needs and success of the main body, the battleships. And now we surely have the airplane, with its special missions, as another and most vital contributary class, but which at present cannot put to sea with the fleet, in the broad sense of the word, without its "dove cote" or carrier ship, which must accompany the fleet and be protected by it.

The status of the battleship is best described in the words of the General Board of our navy in its report to the Secretary of the Navy, dated November 17, 1914, and which was signed by the then Admiral of the Navy, the late George Dewey:

Command of the sea can only be gained and held by vessels that can take and keep the sea in all times and in all weathers and overcome the strongest enemy vessels that may be brought against them. Other types are valuable and have their particular uses, all of which are indispensable but limited in character. But, what has been true throughout all naval wars of the past, and what is equally true today, is that the backbone of any navy that can command the sea consists of the strongest seagoing, seakeeping ships of its day, or of its battleships.

As Bacon said:

He that commands the sea is at great liberty, and may take as much and as little of the war as he will. Whereas those that are strongest by land are many times nevertheless in great straits.

Germany put up a hard fight in the air during the late war, as well as on the surface and under the sea, but her one-time aerial supremacy was not sufficient to give her the victory, showing her need of the capital ship. The doughboy and the bluejacket of the Allies, nearer the bosom of Mother Earth, held the winning cards, and there was no peace until the former could stack his arms on the banks of the Rhine and smoke his pipe in comfort, or until the latter could anchor his big craft

of steel in the harbors of the high seas and take an unmolested shore leave.

Some of our recent writers have attempted to show that navies, and particularly the battleship, are now useless and that the airplane is the dominating instrument of military power, the gist of their contentions being that the airplane can protect our coasts and ward off the hostile fleets of any and all comers. There we have the "flare-back." These tests have proven to our masses, as well as to the world at large, the infinite value of the aircraft in coast defense, and as they were carried on at a distance of 100 miles off shore, which distance is by no means the limit of their effectiveness, we are convinced, as never before, of the great value of the airplane as an auxiliary arm of the modern coast-defense system, the backbone of which is the big gun of both the fixed and movable types. But here we must not becloud the function of the Navy. We must not raise a "smoke screen" along our shore line and bury our heads and arms in its sands.

Home defense is one thing and freedom of the seas is another. You may lock and bolt the doors and windows of your domicile, but where are you and what gains it, if you cannot travel the street or road in front of your neighbor's castle, in safety and peace, when on your way to the store to buy food or other necessities or to barter the fruits of your soil or the results of your handiwork?

The protection of our shores from foreign aggression will not give us the freedom of the seas. It will not give our 6,000,000 tons of merchant shipping entry to the ports of the world. The commercial frontiers of a peaceful maritime nation should, by all that is right and just, extend to all the ports of the world. "Uncle Sam" has gone to sea once more and we are now striving, during this period of readjustment of the world, to return again to our former and now historical state of "maritime independence." Rich as we are in natural resources, the ports of the outer world hold much that we must have and in payment for which we must deliver our own products. Without our own shipping and the "police force" to protect it, we must depend upon the good nature of other peoples not only for price but deliveries of those things in which we trade, and naturally, and at best, we must pay a heavy freight bill to the maritime powers for all that we so give and receive.

The duty of coast defense is not a strictly naval function. It is only a general and incidental one and is involved in the broad mission of the Navy as the instrument of sea power in maintaining the freedom of the seas for its peoples.

The duty of coast defense is of local character, defensive by nature, and devolves upon forces ashore with land weapons as the most economical means. Coast defenses must be such as to guarantee the Navy a free use of its bases, to relieve it of any necessity for local protection of the coast, and in the event of the defeat of the Navy they must finally prevent the invasion or occupation of any part of the coast line.

The broad purpose of a navy is to establish and maintain the freedom of the seas for its peoples and to protect them from foreign aggression. In the words of our great naval authority, the late Admiral Mahan, U. S. N., " . . . the necessity of a navy, in the restricted sense of the word, springs, therefore,

from the existence of a peaceful shipping . . . " Again he said: " . . . if the defense of ports, many in number, be attributed to the navy, experience shows that the navy will be subdivided among them to an extent that will paralyze its efficiency." Speaking of the value of fortifications for coast defense, the admiral said: "Permanent works, established in quiet moments on sound principles, have the advantage that they cannot be shifted under the influence of panic."

In peace times an adequate navy guarantees an equal share and opportunity, at least, with other nations, in the commerce of the world and in the use of the sea, the common highway of the world. In warfare its prime objective is therefore the "command of the sea" in so far as the enemy is concerned. This may be accomplished only by the destruction or isolation of his navy, which, quite naturally, results in the severance of his trade routes and the capture or destruction of his merchant marine, much to the commercial advantage of the mother country of the victorious navy.

This wartime rôle of the navy is an offensive one and its mission at this time is best performed by aggressive action—by seeking and destroying the enemy war fleet at the earliest possible moment wherever it may be met to advantage; or else to drive it from the seas and thereby establish a positive freedom and use of the seas for its own peoples. In this way command of the sea will be best secured and the protection of the mother country, by the navy, be most safely and economically accomplished. The principal weapon of sea power must therefore be ships, and big ships at that, capable of going to sea for great distances and capable of keeping the sea through and by means of their own self-contained powers and dominance of the elements for long periods of time. The battleship must needs be the mother ship of sea power.

The influence of the sea enters largely into the history and success of all great nations or peoples; by it, and through it, nations rise or fall, and without access to the sea, no peoples can obtain or hold the greatest fruits of civilization.

In looking about for means or weapons which may be necessary for equality or protection, maritime peoples should first acquaint themselves of the influence of the sea upon the destiny of those peoples bordering upon its shores. A knowledge of this will aid in the selection of the best means of defense. It was from a complete understanding of the influence of the sea that there grew up the safe old British conception or doctrine of defense, that "our frontier should be the enemy's coast line." This is the essence of naval strategy and the goal in any contest for sea power. Witness the success of British sea power, which has more than once "saved the world for democracy," and which we know has been based upon the "capital ship." A proper consideration and a due conception of our rightful position upon the sea, with all that it holds in store for us, will aid and guide us, we hope, in the selection of both battleships and airplanes, as well as other essential weapons, in due proportion for all our needs.

With the introduction of the airplane as a fighting auxiliary of the fleet, we may expect some modifications of naval tactics due to its use as a fleet weapon, as well as from the

necessity of protecting the airplane carrier.

In the days of the sailing ship admirals maneuvered their fleets for the position in the wind in order to keep their ships under control when advancing upon the enemy. Since the very long-range gun has been in use, the position affording the best "visibilty" has been much desired, and since the late Battle of Jutland we have heard much of the term "low visibility."

With the shores of a nation amply supplied with aircraft bombers, an attacking fleet must catch its opponent well off his own shore—on the broad seas in fact, out of reach of aerial reinforcements from those shores, or off the shore of some neutral power where the fleets may meet on an equality in so far as airpower is concerned. And, of course, efforts will be made to induce the other fleet to come into one's "own backyard," so to speak, for the fight with a view to drenching him with bombs by an overwhelming lot of aircraft based on shore. A weaker fleet may, of course, hover along its own shores, if isolated by wide stretches of water, without harm, when protected by an ample air force ashore —but at the loss of sea power to its peoples. The German Navy did this during the last war, since it was lacking in battleships, and left the command of the seas to the Allies.

What of the protection of the airplane carrier, the aerial mother ship, this basket full of precious eggs, for the destruction of which, as a preliminary to the final engagement, much effort will be directed on both sides? How will it be protected against submarine and aerial attack, as well as against gun fire, in the future battle between naval fleets so equipped? Once the airplane carrier is lost, the fleet will be in a position somewhat akin to that of a man once happily seated upon a frail limb, above a pack of hungry wolves—and which broke before he could shift to another. Without its aircraft and carriers a naval fleet will be lost unless it can put back to the protecting wings of its country's shore craft for replacements. The admirals of the future will have many additional cares from this tranquil looking quarter. This delicate status of the airplane carrier will naturally result in the modification of the battleship class, as well as other large naval craft, so as to permit of their equipment with bombing and other planes in limited numbers. Their deck space must be enlarged to permit of the take off and landing of airplanes, whch will also demand enlarged hold space for carrying them.

We will now undoubtedly witness the same constructional race for size, flying radius and bombing capacity of airplanes, as well as for quantity production of planes and carriers, as we have seen between the nations for gun power, armor protection, speed, tonnage and quantity in battleships and cruisers since the famous battle between the *Monitor* and the *Merrimac*.

It will be interesting to note the effect, if any, that the results of these tests will have upon deck and hull construction of the battleship, and whether or not any serious attempt will be made to provide additional strength in these details for the purpose of withstanding the super-aerial bomb. The modern battleship is now possessed of certain deck protection against falling gun projectiles and hull protection against the lesser charges of mines and torpedoes, but it would seem useless for naval con-

struction to enter into competition with the greater charges of aerial bombs in this way. It would seem wiser, instead, to greatly increase the amount and power of anti-aircraft armament of these ships and perhaps to attack the aircraft with something like its own weapon—that is, with aerial bombs to be fired from the ship in an effort to either destroy the aircraft or to set up a violent air disturbance in its vicinity which will overcome its stability in flight. Then, again, we might try the aerial gas bomb against the flyer and even throw up greater smoke screens to becloud his vision.

We have heard that 1,000 airplanes can be built for the cost of a $40,000,000 dreadnaught. Maybe so, but when we stop to figure the cost of the airplane carrier, personnel, frequent replacement, air fields, ground shelters and other incidentals the monetary argument and balance swing towards the fifty-fifty basis. We admit the superiority of the investment from the standpoint of coast defense, which, we have just contended, is not the broad purpose of the battleship. We must not drift into the fog here, but stay in the open and put each tool to its appropriate task.

We are horrified indeed at the great and increasing cost of the capital ship, just as we are over the increased cost of shoes and other necessities, but it is only the result of constructive and natural competition and is of ancient origin. We are told that the great King Alfred of England was "never content that" his warships "should be anything but better than the ships of his enemies." He therefore gave his personal attention to every detail of their construction, even to the selection of the wood, as Leyland tells us in his book on "The Royal Navy." Is there any wonder, then, that the modern British Navy is built along superior lines, and since the life of the Empire depends upon sea power.

It is a long stretch of time since men first went to sea to fight with bow and arrow, spears and other cutting weapons and even with fire to destroy each other, in quest of that magical blessing or necessity which we call, at times, "freedom of the seas," "command of the seas" or "sea power." The modern battleship represents a huge advance in cost over its ancient parent, but, even so, its power and influence is likewise proportionally greater and the naval power of a nation is now represented by a score or more of this class, with a hundred or more of auxiliary craft, in place of the fleets of many hundreds, and even thousands at times, of sail and galley of olden days.

The airplane is in its infancy, and in size, power and cost it is now small, and perhaps infinitely so, as compared to its probable descendant of a century hence. It may even in time be armed with guns of the super types of today, manned by a thousand men and with armor protection in proportion. We may safely predict, however, that it will never replace the battleship at sea or the infantry arm on land, each in its proper sphere of power and influence, until it reaches a state of development which will free it of the necessity of a protecting resting place, both ashore and afloat, and which will permit it to take the air in all sorts of weather and for long periods of time with the ability to come to rest or anchor on the water with the same degree of safety as on the ground at present. Then we

will have the flying battleship or the "winged war-horse," creations for which the undaunted genius of man may dare to strive.

We confidently anticipate and look forward to a reduction of armaments in the near future, but whether this world hope is realized or not, the only sane defense plan for a nation is to provide itself with all the useful and essential types of weapons, including battleships and airplanes, that it finds in the hands of any or all competitors or possible opponents in the struggle for world existence or independence, and to provide a relative sufficiency of them.

Habit

Habit is the biggest influence in your daily life. You not only do things in the way which has become your habit, but you think, make decisions, use your judgment, in the way which has become your habit.

The droop of your shoulders or the length of your step is a habit, the way you hold a pencil or greet an acquaintance or think of your work is a habit; therefore, if you want to be successful and to live happily, watch your habits, not only in big things but in little things.

Anything that becomes a habit becomes easy. Do a thing four times in the same way—the fifth time is easier. Do it a dozen times, and the thirteenth time it comes naturally. Do it a score of times, and the twenty-first time you do it without thought or effort.

That's why it's easy to form a habit of any kind—being cheerful, or being neat, or taking proper exercise, or saving money, or *making good in your job*. Watch the little habits.

Red Occupation of the Crimea

WITH the defeat of General Wrangel's Army and the evacuation of the Crimea, the last vestige of organized opposition to the Bolsheviki in Russia passed.

The events attending the Red occupation of the city of Sebastopol are told by a refugee who left the place in a row boat on the night of November 21 last and was picked up at sea by one of the Allied battleships.

His story appeared recently in a Russian newspaper published in Paris, and has been published in this country in *The Living Age*.

It is interesting to note that in his account he mentions the Hungarian Bolshevik agitator, Bela Kun, as being the commissar sent to the Crimea for the purpose of instituting the customary reign of terror in that unfortunate sector.

The first Red detachments entered Sebastopol on the morning of November 16. From the time when the French battleship *Waldeck-Russeau* and the Russian warship *Kornilóff* left the harbor, and up to the time when the Reds came in, the whole city was at the mercy of mobs, which robbed and marauded without cessation. Warehouses, stores, and even private dwellings were looted. A party of marauders broke into the cathedral of St. Peter and St. Paul, and, finding nothing there, perforated the altar and the icons with bullets.

Budenny's cavalry reached the city ahead of the main forces. His soldiers look well fed and are well dressed. Immediately upon entering the city, the cavalry scattered in small detachments. Soon after that shots were heard in many quarters. The soldiers were ordered to deal summarily with the marauders: caught in the act, the latter were either shot or sabered on the spot.

By noon the infantry began to enter the city. The Moscow "Red Cadets," the Lettish Battalion, and the Lenin Communist Regiment were among the first to arrive. After occuping the port and all the government buildings, the Red command immediately sent detachments to different parts of the city for the purpose of finding and arresting the "Whites." The orders were to search all houses. The Red soldiers broke into dwellings and apartments, demanding passports. Some of those searched were let alone; others were taken out into the street and shot on the spot. No exceptions were made even for women and children.

In the meantime, the Sebastopol War-Revolutionary Committee, which was formed at the time of the evacuation, issued a series of orders concerning the life of the city. The inhabitants were forbidden to go out after six o'clock; all Don currency was declared null and void; all arms were ordered immediately delivered to the authorities; all "Whites" were ordered given up. By the evening of the same day, an Extraordinary Commission was organized, headed by Zavyalo-Bestuzhe, a member of the Moscow Extraordinary Commission, sent to the Crimea for the purpose of organizing the work of terror there.

All that night Red soldiers roamed through the streets of the city. Every person in a military uniform was seized, and if signs of removed epaulets were visible on his shoulders, he was immediately killed. Many civilians were also killed that night. Only those were not touched who had in their possession documents proving that they were originally inhabitants of the Crimea.

On November 18, Colonel Kameff, the Soviet commander-in-chief, and Bela Kun, the commissar for the southern front, arrived in Sebastopol, which was already full of soldiers and sailors. Kameneff remained in the city only a few hours, leaving in the direction of Kerch, where the Reds were still fighting the remnants of the Cossacks.

On the following day, the "unloading" of the Crimea began. The Red authorities gathered over 400 officers, who had escaped death during the preceding three days, at the railroad station, placed them in freight cars and sent them north. Their fate is unknown. All the refugees from the northern and central provinces were rounded up, divided into groups of men and of women and children, and sent to their original homes in charge of the Extraordinary Commission.

Several hundred citizens were ordered to remove the corpses which were piled high in some streets, particularly Yekaterininskaya and Nakhimovsky Prospect. The corpses were moved and piled on the piers, from which they were to be loaded in boats for removal to the open sea. But there were no boats available for this, so that the authorities requisitioned row boats and used them for removing the corpses. The dead bodies were thrown into the water quite near the shore.

Until November 20, no one was allowed to leave Sebastopol. The Red soldiers told us that the same thing happened in all the other cities of the Crimea. They also said that in Alushta all the wounded soldiers found were killed by the Bolsheviki. Nothing is known of the fate which befell the wounded remaining in Sebastopol.

Many persons who could not escape from the Crimea sought refuge in the mountains; special detachments have been sent to hunt them down.

As far as food supplies are concerned, Sebastopol is in a very precarious situation. All stocks have been requisitioned by the authorities. Private trade has been prohibited. No food products are to be gotten anywhere. The warehouses which escaped being looted are being rapidly emptied of their products, which are shipped north.

Many buildings in Sebastopol were burned down. Among them was the building of the Taurida Zemstvo, which was destroyed in spite of strong protests made by the Revolutionary Committee; for the latter had absolutely no power until the arrival of the Red troops.

Truly the people of Russia are passing through a series of adventures that are calculated to try the soul of any nation. There are today more than three million Russians, the intellectuals of the nation, who are refugees in foreign lands. The great majority of them are absolutely penniless. Those who have been so fortunate as to find work are earning barely enough to keep body and soul together.

These people, however, are the fortunates who managed in one way or another to get out of Russia. Those who remained voluntarily or who were unable to get out have been exterminated by the Bolsheviki.

And this is the state of affairs into which Lenin and Trotsky would plunge the nations of the world.

(I)

Teaching in the Army

By Captain Elbridge Colby, Infantry

WHAT relation has education to the Army?

I imagine this question has been asked innumerable times. I can see many a wise wag on a college campus getting it off flippantly among his friends as he cites a news dispatch in the morning paper that tells of an army educational conference in Washington. I can almost hear the equally flippant replies.

The substance of the problem, though not so exactly stated, was thrown out to me as a challenge on two separate occasions. Once an old friend pathetically regretted that I was wasting in the Army the training and experience I had secured in research work and in teaching. Another time, another declared that it must be a dreadfully monotonous place for a man of intellectual habits. In each case I simply smiled up my sleeve, said that I liked it and resolved to emulate Chesterson. You recall that when he was asked a question once in a drawing room, he went home, put his answer on paper, and found he had written a book, "What's Wrong With the World." My purpose, therefore, will be to show what is wrong with my two friends. But I shall attempt to retain the courtesy of polite society and will actually show what's what and what's right in this relationship between military and educational circles. I hope I shall be able to tell them what's what without offense. If I succeed, I am convinced I shall be doing what's right.

DEFINITIONS

But before proceeding further it would be best perhaps to clear the ground a bit and come to an understanding over two minor but fundamental points. If the professors of the universities will grant me these with respect to the profession of arms, we can then be traveling along the same lines in this argument, though still at odds.

What is education? We hear of a "liberal education," "technical education," and "vocational education." These terms differ. The grammarian will say that they differ in their adjectives. The education is the same but the material is different. Pardon the paradox and get at the basis of this thing. Education is the same. Education in the strict sense of the word consists in the giving of information and in teaching how to use information. Education may differ in the material which it uses and in the human material which it receives for education. Education itself, however, must rest upon the firm laws by which its material reacts. The human mind receives impressions, sensations, perceptions, stimuli—or whatever precise term you choose to employ—according to physiological factors which with all but subnormal men are approximately constant. Psychologists have studied the manner of this reception. They have formulated laws concerning the process. They have drawn up principles sufficiently general in character to govern all normal cases. By the recognition and practice of those laws, educators take their human material, apply to it either liberal, technical, or vocational material. The result is education. A

man may be made into a classical scholar, a civil engineer, or a carpenter. It makes no difference; the process is education.

Now we come to the second point: What is the Army? Some, particularly during the "hard times" of business depression, still consider it a place to get three square meals a day. Others, and these are no less sighted than the hungry ones, consider it a machine made to win battles. Occasionally members of Congress, and occasional self-termed "public spirited" citizens, "think it an unnecessary expense"; but they are merely misguided and need not be counted. They are all wrong. To set them right we must make them realize that an army is not created of minutemen, or even overnight—at least no army that wins wars. Raw material must be taken and trained—officers and men. The larger the number to be taken and trained the larger the number which must be retained to do the training when the emergency arises. We must therefore have a peace-time army, trained itself in warlike ways and fitted to the training of the increases to be added thereto. That involves education. And the character of this training, is it merely the fitting of men into a military machine, rounding them out with the form and shape of soldiers, apt at automatic responses to mechanical commands? On the contrary, it involves far more. It involves teaching them their trade, the trade of a soldier, the profession of arms. It involves familiarizing them with the material and showing them how to use it wisely. It involves their instruction in how to do any intelligent thing quickly, in place of searching hesitatingly for the idea. It involves training them as regards their profession, how to estimate a situation, how to arrive at a decision, how to translate that decision into action. That certainly involves education, as certainly as the training of the civil engineer. Do not misunderstand me. I am not speaking solely of officers. Says the War Department: "Every man participating in a military operation has his individual problems to solve." Indeed, such is the character of modern warfare, with its scattered units and with its responsibility progressively divided, that the buck private has as much opportunity for individual thinging as the average civil engineer. The average engineer too frequently has only to follow the charts and plans his employers have approved. The private still has a freedom of action which he must utilize for the benefit of the common plan. Indeed this does involve education.

Now that I have indicated what the Army really is and how it works, I have some trepidation. Education is so inextricably bound up in the purely military part of military life that I have not been able to resist the temptation to say how necessary education is in the Army. I fear that, amid my generalities, I may have proved my point. But such a victory would be incomplete. Generalities alone cannot win an argument any more than generals alone can win wars. Yet, when I bring on the facts, as I next propose to do, and array them properly, I am assured I shall have shown how much education really does exist in the Army today, how much of an education system really lurks in the files at Camp Headquarters.

WHAT THE ARMY TEACHES

Once we scrutinize the facts we find a huge amount of teaching going on at

military posts and camps. This can most conveniently be discussed under three distinct classifications: (1) Training of Troops; (2) Training of Officers; (3) Vocational and Educational Training.

The training of troops is purely military in character and it is going on all the time. Everyone knows that recruits taken into the service have to be given what is known as the basic training. Few laymen realize, however, that this is only basic; that every day of his time the soldier is being trained to a higher and higher state of efficiency. Parade ground drill and ceremonies are used for gaining facility in moving men, for teaching the fundamental language of orderly movement, for instilling discipline, morale, and the habit of coordinated action. But above and beyond this basic training is the real training towards field efficiency. The troops are instructed in signalling by semaphore and the Morse code; in the preparation, carrying, and interpretation of verbal messages; in the meaning and use of military and topographical terms; in the structure, care, and mechanism of their weapons (which nowadays are neither few nor simple); in map reading and map making; in the intricacies of the many instruments for reading distances and elevations; and finally in tactical principles and tactical practice. Real efficiency in these matters is very difficult to attain. It requires constant study, careful teaching and supervision, and frequent practice under varying conditions. At every post and camp where troops are stationed this thing is going on. Programs and schedules of instruction are prepared so as to give these things in the necessary succession. Army life is not only the cleaning and care of equipment and the preservation of a straight company front and a snap and precision at drill. After the technique of extended order is learned, all exercises in deployment are shaped into tactical exercises, giving the troops practice in acting as they would in the face of the enemy. From this point on the opportunity for instruction is unlimited. No two situations are ever alike and the amount of training that can be given is limited only by the time at hand for the preparation and invention of problems. Each problem has a definite purpose and illustrates some principle of tactics. Thus, principles are learned in theory and then more thoroughly learned in practical applications under varying conditions. The company officer is an executive; he is an administrator; he has certain disciplinary powers; he has to see to the housing, the feeding, the clothing, the recreation of the men under his command; but these, however essential, are all inferior in importance to his role as trainer and teacher in military art. Without doubt, he takes rank as an educator.

The training of officers is an indispensable prerequisite to the training of troops. Before the cantonments were opened in 1917, the first officers' training camps had opened and closed. When the divisions were mobilized and were becoming well organized, the officers drilled their men all day and went to classes themselves at night. Of their number certain ones were temporarily withdrawn from time to time and given further instruction in one specialty or another, in the divisional schools or at such places as the Infantry School of Arms at Fort Sill or the Machine Gun Training Center at Camp Hancock.

"This is quite all right for war conditions," I hear my critics remark, "but how about the piping times of peace?" The officer has but little to do nowadays, they remark. The old story! It may be "Mr. Thomas Atkins, when the band begins to play"; but under ordinary conditions "It's Tommy this, and Tommy that." After every war in history the civilian population has forgotten the Army, forgotten that battles are won only by strenuous preparation during times of peace, even—we regret to say—forgotten to maintain a force of sufficient size for national defense. Whatever the butcher, the baker, and the candlestick maker may think, the officer is working very hard, although the cannon never boom and in spite of the lack of thrilling street parades.

Officers are trained in peace as well as in war. There are schools for them at Leavenworth, at Fort Riley, at Camp Benning, at Camp Bragg. There is a complete system of higher education in the Army in effective operation; training each officer in the technology of his own branch of the service and in the higher phases of tactics and troop landing in the face of the enemy. Furthermore, they are being trained to be teachers. These schools furnish instructors for the regimental schools, instructors for the National Guard, instructors for the military colleges, instructors for the R. O. T. C. For instance, they teach rifle marksmanship; but not only that, they teach in addition how to teach rifle marksmanship. A colonel met a lieutenant on the street. "Well, how are things coming?" "Very well, sir; I've learned more about the rifle than I ever dreamed of; I am shooting better than I ever did in my life before." "But that's not the point! Are you learning how to teach men to shoot?" When the officers study the automatic rifle, a great deal of emphasis is placed upon the organization of students for instruction; all the pedagogical tricks that make such instruction efficacious are used, and in addition are pointed out and urged for use when the student officers shall become instructors.

The course of instruction at the special training schools is then supplemented by garrison schools for the officers doing duty with troops. Each winter, when inclement weather practically compels indoor work, preparation starts for the spring and summer. The garrison schools ground the officers well in military law, in administrative detail, and in tactical principles. In the outdoor season the principles are continually exemplified in practice, and more thoroughly taught on the ground at maneuvers. For a maneuver is not simply a "sham battle" or a show. It always requires the actual making of decision and is always followed by a critique.

Nor must we minimize the really educational character of this intensive training of officers. The much maligned phrase, "higher education," may have fallen into disrepute as something vague, idealistic, remote from the business and bosoms of men. Not so in the Army. The military educator is concrete and direct. He has one supreme advantage which any educator might well envy. He deals with concrete facts and with living human possibilities. No fine-spun theories here. No dry bones. The person under his instruction in machine guns, for instance, has a tangible object, a real gun, to pry into. That person visualizes the capabilities of the weapon as he may have to use it to stop a dan-

gerous enemy in a critical moment of battle, and has the opportunity of firing that weapon while under instruction, and of seeing just what it can do on a tangible target. That person studies the theory, the mathematics if you please, of indirect fire, then actually goes out in the field and practices what has been preached to him. The point is proved beyond doubt. Many a pleasant professor of the colleges would give much to be sure of his students doing the same. Is not this education? Candidly, is there not a much more accurate check upon the results?

With a regular army of the size we have today, and with war-time armies of the size they must be in the future, it is inevitable that all army officers must become teachers as well as leaders of men. Our War Department plans today comprise a skeleton army—a large framework of several corps and divisions to be filled in time of emergency by voluntary enlistments or by a draft. The volunteers and the draft will then have to be trained; trained in large numbers in hasty cantonments; trained as rapidly as possible and as well as possible with unpolished tools. None but very small wars will hereafter be fought solely by professional soldiers. The great wars of the future will be fought by a trained citizenry. Training is the problem. The problem is one of education. And when we speak of education we do not mean militarism propaganda or any such nonsense. We mean rather the establishment of an educational system capable of teaching the art of war when we call to the colors thousands of persons whose knowledge is limited to the art of peace.

Vocational and educational training has come into the service during and as a result of the past war. It has been given much publicity and used with satisfactory results by recruiting agents. Some was being given while the conflict was actually in progress—the teaching of illiterates, the Americanization of foreign born, and the fitting of those with but slight schooling for officers' training camps. Much of it started to meet purely military exigencies, the training of men for special technical work with the Signal Corps, with the Engineers, or in the Motor Transport and the Tank Corps, or with the Chemical Warfare Service and the Air Service. In spite of these indisputable facts, I have heard the vocational and educational training in the Army maligned by unthinking persons ignorant of the true state of affairs. They have said that the Navy taught its men a trade and the Army had to follow suit or it would get no enlistments. They have said that "that pacificist Baker" was framing a fine bit of camouflage to keep the nation interested in the Army. They have said that it was only a lure to get enlistments and that the promises were not adequately fulfilled. All of these critics sized up the probable results correctly, but argued backward to the wrong reasons. The Army does teach men trades. The Army still does keep some of the interest of the nation. The army schools are actually in operation. I shall cite an example. To disarm criticism I shall not cite one of the bigger schools at the bigger and best advertised camps. I select a relatively small garrison and here are the subjects.

EDUCATIONAL TRAINING

Algebra	Geography
Arithmetic	Geometry
Civics	General History
Economics	French
English for Illiterates	Penmanship
English Grammar	Spelling
Trigonometry	

VOCATIONAL TRAINING

Auto Driving	Locomotive Engr.
Auto and Truck Repair	Motorcycle Driver
Tractor Driver	Storage Battery
Tractor Repair	Specialist
Musician	Truck Driver
Dramatics	Motorcycle Repair

BUSINESS TRAINING

Bookkeeper	Stenographer
Clerk, General	Typist
Clerk, Payroll	Salesmanship

HOW THE ARMY TEACHES

The Army naturally implies uniformity. It is to be presumed that all instruction of a purely military character will be given in approximately the same manner everywhere and to the same ends, or at least that there shall be no differences on essential points. But these courses of a so-called vocational and educational character, are they standardized in the same way? They are. The professional schoolmen who gaze askance on the military setting itself up an educational establishment because they deem the army officer to know little of schooling have surprises in store. Under the rigid type of inspection so common to khaki camps, there are being used textbooks, manuals, trade analyses, and programs. The Army has called into consultation the best educational minds of the country and is formulating its schedules in accordance with the best accepted opinions. The Army recognizes that few of its officers and men have the necessary training, experience, and other essential attributes for teaching of the highest caliber, and is therefore planning to use the best available civilian force until promising men in the service can be trained for such work. The Army is taking no half measures, and will soon be a dangerous rival indeed as a vocational and educational training system.

Then there are the intelligence tests, of which we heard so much during the war. The foremost educational psychologists of the country—such men as Thorndike of Teachers' College—devised a scheme for rating men on the basis of their intelligence which proved amazingly valuable during the period of war training. Nor has this been thrown aside since the armistice. All too few of the schoolmen of the country saw the full value of these tests. Not so the men in uniform. At the recruit educational center in Camp Upton the scheme was seized upon. Every soldier, before entering school, was given an intelligence test. Then the classes were divided into sections on the basis of the rating in these tests. The brightest were immediately thrown into a favorable environment and the slowest not allowed to drag upon those capable of quick learning nor to become discouraged at their own lack of progress. In moving from grade the same distinctions were kept, so that some advanced three or four times as rapidly as their naturally slower brethren. This is a lesson the schools might well learn from the Army—a lesson in education. (For a more detailed explanation, see article by G. C. Myers in *Education*, for September, 1920.)

Another thing which the Army insists upon in its schools is the shaping of character, and a strong insistence on a distinctly American policy. Whatever

the students learn, whatever they study, whatever they write, has about it a patriotic tinge. Americanization is thus more effectively accomplished than by many a soft-soap course which masquerades around as "Americanization work" or as "literary appreciation." More effective because the student is not preached to but unwittingly does his own preaching. Without realizing it, he becomes his own teacher of those duties and ideals which he ought to cherish. And in these days when so much undesirable propaganda has been discovered lurking in our histories, in our modern language texts, and in our readers, there is something noteworthy in the discovery of military circles accomplishing on a large scale, and spreading broadcast, the very thing that many a school teacher forgets or overlooks to the eternal damage of the credulous pupil.

Finally, there is the so-called Army standard of effective teaching, the "applicatory method." This method, found so effective as regards purely military subjects, is being applied in other subjects as well. And the Army is devising plans for its more general applicability. It would take too long to describe it here. Suffice to say that it revels in the concrete and in the easily remembered. It uses all aids of sight and sound and touch. It states its general principle briefly and simply. It illustrates and demonstrates by opposite example. It gives practical application and immediate practice. The method exists in some of the grades, in some schools; but it scarcely appears at all in high school and collegiate instruction. The Army has no separate lecture room and laboratory. The Army combines the two and furnishes the concrete material to be seen and taught at the same time the theory is heard. The Army is applying this to vocational training—to the vocation of carpentry for instance as well as to the vocation of soldiering—and is trying to apply it to the subjects which are termed "educational."

What with its valuable tendency for standardization, its intelligence tests, its emphasis on character, and its own method of teaching, the Army has entered the educational field with a vengeance. The academic mind will do wisely to scan well the words of ex-Secretary Baker:

> I don't know what the matter is with education, but something is. I doubt if there has been any time in my life when education is as undervalued and in as great disrepute as it is at the present moment. During the war the demand for educated men was far greater than the supply and special systems of intensive training had to be established to furnish the additional educated men required by the Military Establishment.
>
> I do feel that we in the Army have a new opportunity and that we are perhaps in a position to make a new contribution to educational thought. We have young men of more mature mind; we give them an intensive training. If we can in addition be educational philosophers and develop a system that educates men as well as technicians, our work may well be improved and absorbed by the other educational institutions and may finally lead to a departure from the system and theory which are now somewhat in disrepute.

Battle of the Meuse-Argonne

By Major Herman Von Giehrl

(*Continued*)

CONTINUATION OF THE ATTACK
NOVEMBER 1

AFTER a harassing fire, which had been in part strong, very heavy enemy fire was opened at 4.30 a. m. over the entire front from St. Juvin to Ormont Wood near Crépion, east of the Meuse. It died down on the eastern bank after 7.30 a. m. and gradually changed to a steady, harassing fire. There was no infantry attack at this point. On the other hand, the American troops, with numerically greatly superior forces, opened an attack at 7 a. m. on the entire German front from Grandpré to Aincreville. The weak German lines, no longer supported by efficient reserves, were penetrated, first at St. Georges, at Landres and on the Banthéville-Aincreville road. The attack at Landres was directed against the 52nd Division which, in default of fresh reserves, had, after a short rest, been put into the battle a second time, and which had lost a whole battalion on the evening of October 31 in consequence of being shelled with an apparently new gas.

It is true that the 31st and 115th and parts of the 27th and 41st Divisions were brought into line one after another as reserves, but these were all troops that were either exhausted or were recuperating, and which had been called up in a hurry but no longer had much fighting power.

By noon the 15th Bavarian, 52d, 88th, 28th and 107th Divisions, with the exception of the flanks near Champigneulles and west of the Meuse, behind the Andon brook, had been driven back far to the north, about to the Alliepont-Imécourt—Landreville — Andévanne—southern edge of Babiémont Wood line, by the massed enemy attack. The enemy continued his attack in the course of the afternoon, bringing strong forces into action, during which the pressure apparently lay on both sides of the Landres-Bayonville road. He first gained ground beyond Bayonville by a vigorous thrust in the direction of the "Narrenhoehe," on the Buzancy-Harricourt road. The battle came to a standstill on the evening of November 1, approximately on the Briquenay—Thenorgues—north of Magenta Farm—south of Barricourt—Villers-devant-Dun—southern edge of Babiémont Wood—heights south of Doulcon line. This was because the German troops in Barricourt Wood were outflanked from Bayonville and the 240th Division, near Champigneulles, was, despite stubborn resistance, no longer able to hinder a widening of the American penetration towards the west and had finally to give up its positions.

The Americans had thus gained 7 to 8 kilometers in depth. As the German losses had been heavy also in guns and material, a continuation of the attack was definitely looked for, and as the positions held at the moment could not be maintained owing to the deficiency in reserves, the German High Command ordered the withdrawal of the front to the Autruche—Harricourt

—northern edge of Buzancy—Barricourt—Villers-devant-Dun line, and the blowing up of the bridge over the Meuse at Dun. In other words, the right wing of the Fifth Army was to abandon the ground between Grandpré and Buzancy and, at the same time, the Aisne defense also, in order not to lose contact with the Third Army adjoining it to the west. In consequence of this movement, the left wing of the Third Army had to be withdrawn from the wooded hills south of Le Chesne behind the small Bar River and the Ardennes Canal on both sides of Le Chesne.

A great success was therewith attained by the Americans. The tactical objective point—the German railways in the middle valley of the Meuse—had been approached to a considerable extent, and the abandonment of the German Aisne defense, which the French had not been able to force in spite of all their efforts, was achieved.

NOVEMBER 2

The withdrawal to the new front that had been ordered by the Germans was carried out during the night according to plan and without molestation. The Americans followed in the course of the day on the left side of their zone of attack, in which the Germans had voluntarily evacuated the region of Buzancy, as far as Thenorgues and the southern edge of Buzancy. They unremittingly kept up their attacks farther to the east. After artillery preparation, the heights south of Villers-devant-Dun were attacked in the forenoon, and further heavy attacks were launched from there during the afternoon. No reserves being at the disposal of the Germans, the German front was withdrawn during the day to the Barricourt—Tailly—northeast of Villers-devant-Dun—southern edge of the Rappenwald and Sassey Wood line. A further withdrawal to rearguard positions at Oches, Belval, Nouart Wood and Wiseppe was ordered for the night of the twenty-third with the object of putting greater distance between the German lines and the enemy.

The German Command had to face new difficulties, caused by the necessity of relieving the Austro-Hungarian troops on the east bank of the Meuse, now that their government had concluded an armistice with the Allies, and of protecting the line of the Meuse from Dun to Saulmory against attempts of the enemy to cross it. The 117th Division received orders to relieve the Austrian 1st Division in the region of Vilosnes during the night of November 2, and, in addition, to take over the abovementioned defense of the Meuse as far as Saulmory.

NOVEMBER 3

All these movements were carried out, though the new positions on the western bank of the Meuse were not taken up without difficulty, and fighting continued until nightfall in some parts of that sector.

The Americans followed during the day and continued to work their way until afternoon into the new lines everywhere. They penetrated into the rearguard positions near Vaux and Belval, but counter-attacks by German troops restored the general situation.

On November 3, new attacks ensued east of the Meuse between Sivry and Crépion, where the German 228th and 192nd Divisions had now taken up positions.

THE RETREAT TO THE ANTWERP-MEUSE POSITION

The long-prepared withdrawal to the so-called Antwerp-Meuse position was begun by all the German Armies on the evening of November 3. The Third and Fifth German Armies, which had been opposite the American front, were withdrawn behind the Meuse and Sedan was kept as a bridgehead. The position had been inspected some time since and its improvement begun. Nothing had been accomplished, however, beyond the erection of a few obstacles and the clearing of a free field of fire for the infantry, owing to the lack of both time and labor.

The retreat of the army behind the Meuse began on the fourth with the withdrawal of the parts of the right wing of the Fifth Army that were north of Stenay. During the following nights of the sixth and seventh, the left wing of the Third Army also withdrew its troops to the northern bank of the Meuse. The whole Third Army had taken up the new positions north of the river by November 8, following some heavy rearguard actions during the afternoon hours of the fourth and sixth, especially on the seventh near Noyers and the Bois de la Marfée, where the Americans violently attacked the bridgehead position south of Sedan.

The violence of the American attacks, directed since noon of November 4 against the positions of the German troops, led to the conclusion that since observing the withdrawal of the German Army behind the Meuse, the American command was intending to engage its main attacking forces in an effort to roll back the German front east of the Meuse in a northerly direction. Numerous attempts to cross the Meuse below Sivry were also made. Such an undertaking took place early on November 4 near Brieulles, accompanied by a simultaneous attack on the positions of the 192d Division in Etraye Wood. The crossing of the river near Brieulles was not effected. The attacks launched against the 192d and, a little later, against the 228th Division, which adjoined the former to the west and extended as far as the Meuse, finally gave the enemy possession of a portion of the high Eichenberg, that much-fought-for and commanding height 4 kilometers east of Sivry. The enemy also made futile attempts to cross the Meuse near Cléry-le-Petit. In the course of November 5, however, he succeeded in getting a firm footing near Liny, Dun and Milly on the eastern bank of the Meuse. Heavy fighting was still going on at Milly in the evening, and a further scattering of the Americans in an easterly direction was prevented.

NOVEMBER 6

On this day the Americans contnued their attacks from Milly onward, in an easterly direction. The ridge of St. Germain, east of Milly, held by the Bavarian 5th Reserve Division and portions of the 241st Division, was lost despite tenacious resistance of those gallant troops, and Murvaux and Corroi Wood also fell into the hands of the Americans towards evening. Owing to this deep irruption, it became necessary during the night of November 6 to withdraw the defense line of the German troops occupying the large arc between Mouzay—Dun—Sivry—Crépion to the chord line Mouzay—Bréheville—Etraye Wood.

NOVEMBER 7

The withdrawal of the front which had been ordered was carried out during the night without incident. Only at about noon did the enemy appear in front of the new positions, against which he made several thrusts during the course of the afternoon. Brandéville Wood, west of the town of the same name, and the high Eichenberg had definitely been given up by the Germans. German sentries were still posted on the ridge of St. Germain.

The new positions chosen on both sides of Bréheville being, however, quite inadequate for machine-gun and artillery defense, a further withdrawal of the German defense to the Stenay—Baalon—Louppy—Vitharville—east of Damvillers— east of Ormes (terminating here in the old positions) line was ordered and was carried out during the following night (November 8).

NOVEMBER 9

On this day the enemy pushed the German rearguards out of Peuvillers, Damvillers, out of the Lissy Wood and behind the Theinte brook.

NOVEMBER 10

The enemy launched heavy attacks throughout the day against the whole front of the Fifth Army between Stenay and Damvillers. Louppy Castle, which was defended by the 10th Division, fell into his hands, and heavy attacks took place east of Stenay, on both sides of Louppy and in Woevre Wood. The 192d Division, which was between Vitarville and Damvillers, was attacked, too, and this yielded a gain of territory to the enemy which, however, was compensated for by counter-attacks of portions of the 183d and 245th Regiments, of the 84th Landwehr Regiment and of the 211th Battalion of Engineers. On the extreme southern wing of the Fifth Army the enemy took possession of Abaucourt.

NOVEMBER 11

Under the cover of autumnal mists, the Americans succeeded, in the early hours of this last day of the World War, in crossing the Meuse south of Mouzon near Ville—Montry and Letanne and in establishing themselves on the eastern bank of the river.

The armistice beginning at 11.55 a. m. then put an end to the fighting on the Meuse and at the same time to the battle of the Meuse and the Argonne, as well as to the whole World War after a tremendous struggle of four and a half years.

CLOSING REFLECTIONS

The battle of the Argonne and the Meuse represented but a part of the offensive undertaken by General Foch in the autumn of 1918, for the British and French had also been energetically attacking since the end of September on the front in Flanders and Northern France. These attacks engaged the activities of a great portion of the troops on the German front, in particular the reserves at the rear. The decision, however, lay with the double attack of the French and Americans on both sides of the Argonne Forest. The offensive launched at that point was able not only to reach either neutral or German territory most rapidly, but it also, and that still on French soil, struck one of the main arteries of the German army, the Metz-Sedan railway, by which essential parts of the army were being supplied and for which no substitute was to be had. There was, after all, nothing new in tactical importance in

this direction of the attack, for Champagne had, for the same reasons, been chosen as the scene of several big French offensives of the years 1915 and 1917.

In addition to a strategically important task, the American Army had the further advantage of possessing absolutely unlimited reserves of men and material, and, what was more striking, its soldiers, in contrast to those of the Germans, British and French, were still wholly unfatigued. After the extremely heavy losses of the French during the period 1914-18, their unfortunate offensive in March, 1917, and their retreat from the Chemin des Dames in May, 1918, this worn-out army, like that of the British—which, however, was not so exhausted but had suffered a severe moral breakdown since March, 1918—could base its future hopes on American help alone.

The feeling which prevailed at the French Headquarters on the arrival of the American masses in May, 1918, has been described in an eloquent manner by a Frenchman[1] in the following terms:

At this grave moment (referring to the end of May, 1918), streams of American troops were seen coming up on all the roads of France. In long columns, extending beyond the range of sight, they marched on Coulommiers and Meaux. The aspect of these splendid youths from beyond the ocean, these beardless children of twenty, radiating health and strength and with entirely new equipment, made an impression which bordered on the unreal. How great a contrast between these Americans and the emaciated, hollow-eyed Frenchmen with their torn and worn-out uniforms!

America was the great hope of France and England. It was the American troops which, already in July, 1918, had covered the roads to Paris and which now, in the autumn of 1918, formed the great reserve for Marshal Foch's offensive which, without this American help, was absolutely not feasible. This help was therefore, from the moral, material and operative point of view, of the greatest importance.

The American soldier went into battle in the first enthusiasm of war, which had long since become an earnest conception of duty with Germans, English and French, and in an ignorance of the horrors of modern methods of warfare. While the Frenchman and Englishman began an assault only from well-prepared fields of attack, after an artillery preparation lasting several hours and preceded by battalions of tanks, and while their assaults came to an immediate stop when those means of attack broke down, the American soldier knew as yet no fear of losses. He could be placed anywhere and he could be sent forward from wholly unprepared fields of attack, as was done east of the Argonne. This novice willingly accepted the hardest losses as something quite natural, just as every German, Englishman and Frenchman, and every gallant soldier had done and would have done at the beginning of the war. The insufficient training of the American Army was actually compensated for by the soldiers' acceptance of great losses. The Northcliffe propaganda had also taken care that he should see in the "Boche," as an enemy, the personification of almost all the wickednesses of humanity, so that that which always serves as a stimulation in every conduct of war—hatred of the foe—was not lacking.

[1]Pierrefeu: "Le Grand Quartier General."

If all assumptions on the part of the Americans for a fortunate outcome of the enterprise proved correct, the case with the Germans in the autumn of 1918 was an exactly opposite one.

The army had suffered terrible losses during the four and a half years' war. The best men were already long lying under the earth. Our war material, with the continued blockade, could no longer keep on a level with that of the Allies. The reserves of officers and men had become exhausted and the weariness of war was increasing at home. The stirring impulse from home was lacking in the army. The Independent Socialist Party was carrying on a sabotage of the war and found favorable means to its end in the Bolshevistic propaganda and the hunger blockage.

The German army of the autumn of 1918 had behind it the heavy sacrifices of the big offensive of the spring; it was brave, but tired. As a further symptom of the great weariness, the influenza appeared in an alarming extent. The reserves were no longer at their full strength; the machine-gun crews were incomplete. The number of divisions was still the same, but they no longer represented the fighting power with which they could still be credited in the spring of 1918.

It was under these unequal conditions that the battle of the Argonne-Meuse began on September 26. The Americans first of all succeeded on September 26 in that which is the primary principle of all great successes in war—surprise of the enemy. It is to this circumstance that they owed their large gains on the first and second days of the battle.

Three phases of the battle which was drawn out through the three months of September, October and November stand out distinctly.

The *first phase* lasted from September 26 to September 29. It was the first powerful onslaught, which was prematurely stopped by deficiencies in the American system of supplies.

The *second phase* brought with it the continuation of the assault on October 4, under the impression that the enemy forces were completely shattered and that only further efforts were necessary to reach the tactical goal speedily. This second phase of the battle lasted until October 16. Only by degrees was it recognized that the resisting power of the Germans had been underestimated and that the aim could not be attained by a mere continuation of the struggle against the enemy, now that the element of surprise could no longer be counted upon.

The second phase inflicted the heaviest losses upon the Americans and brought them the smallest gains. In it, the effects of the German flanking fire, sometimes from the Argonne and sometimes from the eastern bank of the Meuse, were particularly keenly felt. On and after October 9, an attempt was made to equalize this disadvantage of the first order of battle by extending the attack to the eastern bank of the Meuse, an undertaking which should better have been carried out as early as September 26. The forces brought up on the eastern bank of the Meuse on October 9 were, however, much too weak, in view of the extreme difficulties of the terrain there, to accomplish the expected relief for the troops fighting on the western bank. Like the American left flank, the French right flank also encountered very strong German op-

position from the Argonne. The French failed to pass the barrier of the Aisne. It therefore became the most important aim of the Americans to carry forward their attack between the Meuse and Grandpré in order to bring the French attack into swing again.

After a fortnight's pause, the *third phase* of the battle brought with it that concentration of the American attack which it had lacked since October 9 and which now permitted the assailant to attain the aspired-to end. November 1 showed a gain of ground which was almost greater than that of September 26 or 27. However, it was not the element of surprise which this time gave success to the well-prepared attack, but the disproportionate force of the two opposite sides. The German reserves, which had been able to fill up the gaps after September 29, were now lacking, and it was those circumstances that forced the German Command to take up the Antwerp-Meuse position.

The German defense throughout the entire duration of the battle differed greatly from the former German defensive battles as they had been fought in France and Flanders during 1916 and 1917. From the beginning on, the German defense lacked the powerful artillery of the former defensive battles. Besides that, there were not sufficient reserve forces available to render possible a counter-attack on a large scale. As early as September, the German defense had to confine itself to local counter-attacks of single regiments and battalions, whose attacking power was not very great on account of their limited effective strength. Even this mode of active defense was only sporadically possible after November 1.

It was a disproportioned struggle, which turned more and more to the disadvantage of the defender. That must never be forgotten in a calm study of the course of the battle of the Argonne-Meuse.

Classifying Omar

Here is a story from a Cincinnati picture show. *The Literary Digest's* "Topics in Brief" were being shown. They included the story of the man who, when asked if he liked Omar Khayyam, replied, "I never drank it," and whose wife objected: "You ought not have said that—it's a kind of cheese."

A girl in the audience laughed and said, "That's a good one," and the girl next to her asked, "Well, what is it?" The first girl replied, "A cigaret."—*Overheard by a correspondent.*

The Operations Around Verdun in 1916

The French Service of Supply

By Colonel G. H. Estes, Infantry

As the official records of France and Germany pertaining to the World War are not yet available, the accuracy of the facts stated in this paper cannot be guaranteed. Great care has been taken to verify the statements made herein by consulting and checking the most reliable authorities available, and it is believed that the official records will show only minor discrepancies in the statements of facts.—THE AUTHOR.

The Selection of Verdun as the Point of Attack.—Viewing the entire western front in the World War as a single battle line, which it practically was, Verdun was but an incident of the fight—one phase of it only—but it represents far more than a military feature of the line or a combatant situation in the great battle. As the tide of German superiority swept southward it reached Verdun, but this point, like a great rock in a turbulent stream, resisted the Teutonic flood and forced it to turn aside and, continuing its course, to leave it standing as a monument to French determination.

By 1916 Verdun had grown to mean to the French people much more than a mere strong point in their line. It assumed a sentimental aspect out of all proportion to its military value. It represented in a way the nation itself. In all probability, with its fall there would have gone down to hopeless resuscitation all French hopes and all French perseverance. It is easy to believe with its fall France would have fallen, but, while it held, hope burned bright and determination to succeed never faltered.

Its great political, moral and sentimental value was realized by the French leaders, its retention was determined upon regardless of the price to be paid, and eventually a wall of patriot dead of France formed a barrier over which the Germans could not pass.

While it is possible that Germany may have been influenced to a certain extent by sentimental reasons in selecting Verdun as a point of attack in 1916, it is more probable that considerations of strategic and tactical advantages governed.

It is interesting, and in a way instructive, to speculate on just why Verdun was selected at this time for the point of attack, but until such time as German records are available for study such speculations have an academic interest rather than a historical value.

Verdun was isolated from the rest of France as far as railway communications were concerned. The French line formed a salient which permitted convergent attacks to be made upon it and had the further handicap of a river behind it. The German High Command reasonably hoped that, with the bridges destroyed by artillery fire and the formidable obstacle of the Meuse behind them, the French troops would be cut off, first from supply and then from retreat. Success here would separate the armies and open the road to Paris,

which appears to have been the primary objective. Germany undoubtedly knew of the failure on the part of the French to maintain the defenses in prime condition in this sector and the fact that its protection would be undertaken without the use of railways for supplies.

The final and determining reason for the selection of Verdun by the German General Staff seems to have been German superiority in railway facilities at that point of the line. France had one ordinary double line through Ste. Menehould within easy range of guns south of Vauquois and a narrow-gauge line from Bar-le-Duc to Verdun. The Germans had fourteen strategic lines, eleven of which they had specially constructed. Supplies of all kinds and in practically inexhaustible quantities could be most conveniently fed into the German lines through Metz from Mayence, Strassbourg, Bitche, Sarrelouis, etc. There was no place on the whole front in closer proximity to the German arsenals.

It is interesting to note the view of the French General Staff as contained in one of the official reports:

> From the German point of view there was nothing paradoxical in the selection of this battlefield, though many critics have thought otherwise. To bring your enemy to action with a river behind him, and when his sole railway communication is at the mercy of your artillery, is always an inviting prospect and that was the situation at Verdun. But the German General Staff reckoned without the French General Staff. Ever since February, 1915, the question of maintaining, supplying and reinforcing an army of 250,000 men on the right bank of the Meuse had been studied to the last detail on the assumption that railway communications would be impossible. The development of our mechanical transport by road at that moment—it has been almost perfected since—was such that at a moment's notice we could bring up troops, supplies and ammunition, everything necessary to the defense of Verdun, by road. This is the reason we have been able to maintain our defensive lines at Verdun and to bring up, without any hitch or unnecessary loss, thousands and thousands of men.

Germany entered upon the siege of Verdun with every prospect of decisive success, and nothing was left undone to insure it.

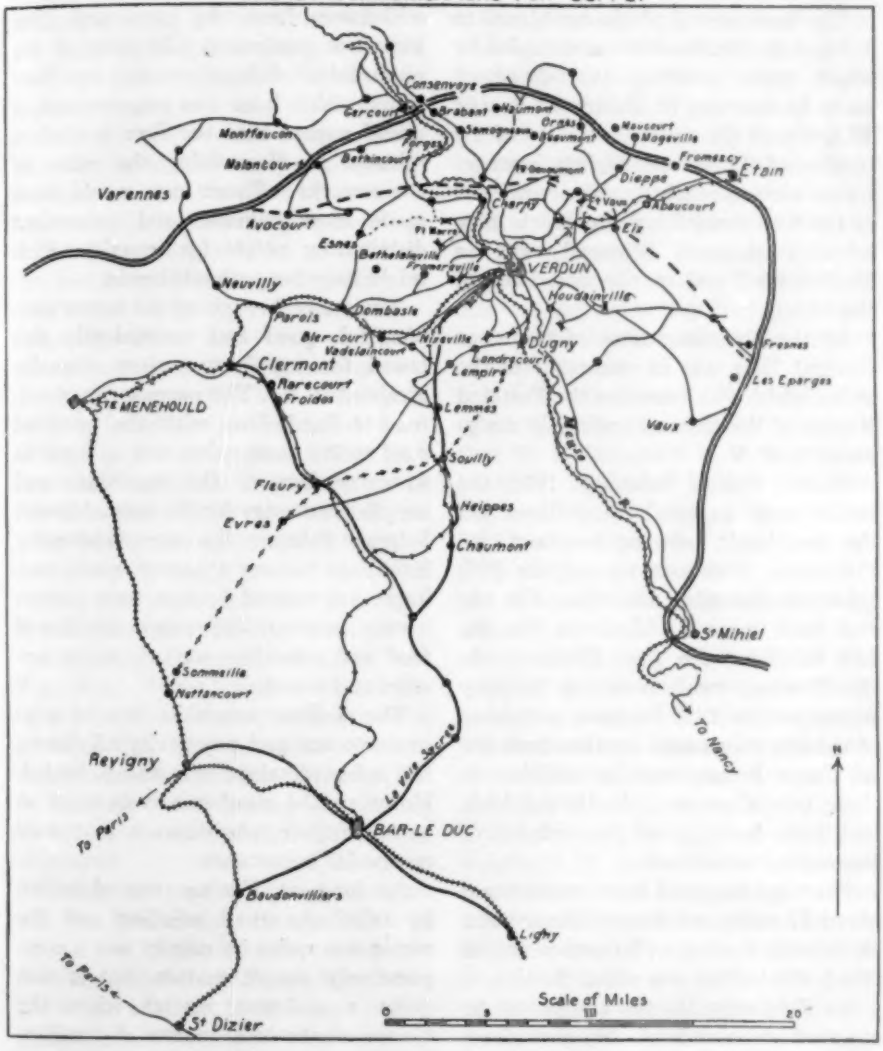
For purposes of defense, Verdun could not be classed as a permanent fortification. Based on the earlier experiences of the war, the forts had been stripped of their large guns in order to enable the French to organize favorable terrain farther out from the city. From a military standpoint this sector was not unlike any other sector of the front. The forts had ceased to exist as such, and the armament had been distributed among batteries and field works.

The General Plan of Defense.—The general plan of defense consisted of a first line supported by the strong points of Brabant, Consenvoye, Haumont, Mogeville, Les Caures, Herbebois, Ornes, Maucourt, the woods of Charieres Heights and Fromezey; a second line ran through Samogneaux, Hill 434, Morment Farm, Beaumont, Le Chaume, Dieppe and Abaucourt. These lines were supported by the line of forts encircling the city, which, however, had been dismantled.

The German concentration for the attack on Verdun was skillfully effected, and by feints along the entire length of the western front in January and the first weeks of February, 1916, the real point of attack was well concealed.

French advanced positions around the fortress were held by inconsiderable forces forming a magnified outpost

FRENCH COMMUNICATIONS FOR SUPPLY



zone. Behind, on stronger positions, were the supports, and farther back, to the west of the Meuse, the reserves were located.

The line from Brabant-sur-Meuse to Fresnes in the Woevre was occupied by small units totalling two divisions. More to the rear, on Talau and Pepper Ridges and the north extremity of the heights of the Meuse, slightly stronger forces were entrenched. The remainder of the 10th Army Corps, to which these advance elements belonged, was in Verdun itself and on the west bank of the Meuse.

At the commencement of the siege General Herr was in command of the sector which was known as the Fortified Region of Verdun and ordinarily designated R. F. V.

On the 21st of February, 1916, the sector was occupied as follows: On the west bank, between Avocourt and the Meuse, from west to east, the 29th Division, the 67th Division. On the east bank, from the Meuse to Eix, the 72d Division, the 51st Division. In the Woevre, two territorial infantry regiments, the 132d Division, a division of the 7th Corps with another from the 2d Corps in reserve. In addition to these, two other corps, the 1st and 20th, had been brought to the vicinity of Bar-le-Duc as reserve.

The total length of front covered was about 27 miles and formed the arc of a circle with Verdun as its center and of which the radius was about 9 miles.

On February 21 the troops to be supplied consisted of 80 battalions holding the front, behind these another 88 battalions, 18 being in the R. F. V. reserve and 12 remaining at the disposition of G. H. Q. There was also the personnel of the artillery scattered throughout the sector which had to be subsisted, and the guns themselves which had to be supplied with ammunition.

All supplies and munitions had been withdrawn from the forts, and they were not garrisoned. In view of the remarkable defense made by Fort Vaux, which later was re-garrisoned, it would appear that the French made a mistake in discrediting the value of these works. These forts would have made most valuable and convenient distributing points for supplies which might have been stored therein.

The roads throughout the sector were plentiful, good and conveniently disposed for supplying troops normally assigned to it. The narrow-gauge railroad to Bar-le-Duc, with the metalled road to the same point, was quite able to carry forward the munitions and supplies necessary for the normal forces. When in February the enemy's offensive intentions became apparent, roads were improved, several bridges were thrown across the river, and reserve supplies of food and munitions were brought forward and issued.

The civilian population was ordered to move out and practically all did so, but a few remained who had to be fed. However, the number was so small as to make their subsistence a matter of no special importance.

As long as Verdun was defended by relatively small numbers and the sector was quiet its supply was a comparatively simple matter, but it was quite a different matter when the Germans massed a quarter of a million men and more than 2,000 guns on a narrow front and prepared to push through at this point. It then became necessary to throw in quickly masses of men and material of all kinds and to organize a system to insure a steady

and adequate flow of reinforcements and replenishments.

The General Plan of Supply.—An efficient system of communication is the foundation of strategic and tactical success. As a rule large bodies of troops can be properly and fully supplied only by railways or navigable waters. Railways are the lines of supply employed by modern armies whenever practicable because of their great carrying capacity.

The French organization of the Verdun sector was handicapped greatly by insufficient railway communications. Originally there had been two good routes from Paris for ammunition and supplies, one via Chalons Ste. Menehould paralleling the stabilized front of 1916 to the latter place. This line, however, was within long-range hostile fire from the vicinity of Varennes and Montfaucon and could not be counted on for regular use.

In preparation for the operations against Verdun, this line was cut by bombing squadrons of airplanes and Zeppelins. These breaks were quickly repaired. When the real action opened, however, the line was effectually cut near Auberville by first German fire. It did not cease during the month, though, to be alternately repaired and destroyed.

The other standard-gauge line ran via St. Mihiel and Nancy. This of course was rendered useless when the Germans seized St. Mihiel in September, 1914. In addition to these two broad-gauge lines, there was a narrow-gauge railroad of one meter width, which connected Bar-le-Duc and Revigny to Verdun and to Clermont-en-Argonne. This line was available for the transportation of stores and munitions, but the amount of labor and loss of time involved made it of little value. Besides, its capacity was utterly inadequate to meet the needs of the troops about to be thrown into this sector.

The plans of a new standard-gauge railway line connecting Someilles, Nettancourt, north of Revigny, with Dugny, south of Verdun, had been studied in October, 1915, but no practical progress had been made towards construction.

It is difficult to understand why, in seventeen months' occupation of Mihiel by the Germans, the Bar-le-Duc line was not made standard gauge and even double tracked. It was a distance of only 30 miles.

It is true that a railroad is vulnerable to artillery fire, but it seems reasonable that its maintenance in service would have been no greater problem than were the repair and upkeep of the metalled road which was used.

As previously mentioned, in default of sufficient rail connections being assured, the French General Staff had completed plans by which 250,000 men with all supplies and matériel could be moved by automobile transport to the Verdun sector. These plans included the reconstruction of highways and the provision of motor transport.

The French, then, had available on February 21, in the way of rail communications, the broad-gauge railway as far as Clermont-en-Argonne and the Muesien narrow-gauge system, in connection with the use of which the yards at Revigny for detraining and entraining were enlarged and improved. The whole railway service was placed under the control of the regulating officer at St. Dizier.

This left Verdun actually dependent upon the one main highway running south to Bar-le-Duc. General Herr, foreseeing the great handicap the motor

transport would be under in case of attack, had undertaken the reconstruction of the road in 1915. This highway at first was the average French road, fairly narrow, but with a good foundation. It was entirely rebuilt, a new foundation was laid, and its width extended to about 7 yards. Turnouts were provided at intervals on which disabled trucks could be side-tracked.

Such were the communications when the German artillery opened fire on the whole front from Avocourt to Les Eparges at 7.15 a. m., February 21, 1916. A continuous fire from all calibers was maintained for nine hours, resulting in the practical disappearance of the French first lines.

The Germans increased their pressure and, on the 22d, attacked the Caures woods and the Consenvoye woods and in the evening penetrated the village of Haucourt. Brabant was evacuated by the French on the night of the 22d and the next day Herbebois was abandoned. In the evening of the 23d the village of Samogneaux was lost. By the 25th the Germans had reached the last line upon which the defenders of Verdun could make a stand. They now had advanced about 4 miles and had reached the Douaumont plateau, from which position they looked into Verdun, 4 miles away.

The serious intentions of the Crown Prince were now clearly demonstrated, and the necessity for the greatest effort by the French to stem the tide was apparent.

General Petain, with the whole staff of the II Army, was ordered to Verdun, where he arrived late on the evening of February 25 and took over the command at midnight on the 26th.

The forces of the II Army were organized into four groups, each under a corps commander and disposed in sectors as follows:

1. From Avocourt to the Meuse—29th and 67th Divisions.

2. From the Meuse to Douaumont village—39th and 2d Divisions.

3. From Douaumont to Eix—153d Division, 1 brigade of the 48th Division, 1 brigade of the 16th Division, 14th Division, 1st Division, 212th Territorial Brigade.

4. From Eix to Les Eparges—138th Division, 3d Division, 4th Division, 68th Division, 1 brigade of the 16th Division, 211th Territorial Brigade.

Thus commenced the great struggle which was destined to give to the world a new conception of French character as an embodiment of determination and grit.

Communications.—General Petain, on taking command, devoted his first attention to improving his communications. The construction of the new standard-gauge railroad from Someilles to Dugny, which had been proposed in October, 1915, was started. New sidings were added to the Muesien system, together with other improvements to increase the capacity of the narrow-gauge line.

All roads leading to Verdun from the west and south beyond range of German guns were closed to all but military traffic.

The highway from Bar-le-Duc to Verdun was kept in a good state of repair in spite of adverse weather conditions. To protect this road from hostile bombing, the French collected airplanes from all points in order to obtain and keep supremacy of the air.

The narrow-gauge line was set aside for handling food supplies, while all troops and munitions were to be moved by automobile service, supplementing

the regular motor service already existing.

In the last days of February enormous amounts of troops and supplies poured into Verdun, and by the end of the month thirty divisions had been brought in, though not more than four were engaged at any one time.

The main railroad through Ste. Menehould was still open at this time. It was under fire, though, and practically useless.

Under the circumstances the transportation problem presented was appalling. It was necessary that every day there should arrive 2,500 tons of ammunition, and, in addition, 100 tons of subsistence supplies for each of the fifteen to twenty divisions. Furthermore, there were the reinforcements and reliefs to be moved in and out, some 15,000 to 20,000 men each day, the evacuation of the sick and wounded, and the movement of salvaged matériel to the rear in enormous quantities.

The maximum capacity of the narrow-gauge line was about 800 tons per day, while the haul for the trucks was 40 miles; the tonnage required for 250,000 men was 6,000 in truck capacity, while there was available in the R. F. V., including the III Army, only 1,250 tons—that is, 720 trucks organized into ten groups.

The problem was solved in the following way:

1. The standard-gauge railway as far as Clermont and the narrow gauge from Bar-le-Duc were used for the transportation of rations and for part of the ammunition.

2. The motor transport was used for the movement of troops, engineer matériel and the bulk of the ammunition. Such subsistence stores as could not be carried by the Musien line also went by truck.

3. The motor transport service was developed to its maximum capacity and efficiency.

On February 18 the automobile service had received orders to prepare to put in effect at once the General Staff plan for motor supply prepared the previous year. The officer selected to head this service for Verdun arrived at Bar-le-Duc on the 19th and at once entered on his stupendous task of organizing a supply service.

In three days there were gathered together, from all points of France, some 4,000 machines with an operating force of 9,000 men, and a service was begun which functioned with brilliant success, day and night, for months.

Traffic Control.—On February 20, an automobile regulating commission, with station at Bar-le-Duc, was created to handled the entire problem of organization, maintenance and operation of the transport service. The first action of the commission was to put into effect the following principles:

1. The Bar-le-Duc–Verdun main road was reserved for automobile traffic exclusively; on all the secondary routes, horse-drawn vehicles would circulate, particularly the artillery.

2. In order that no delays be incurred, supplies of all kinds transported to the front were deposited in small ammunition and food dumps organized at certain points rather than delivered over directly to horse-drawn or other transport for delivery to front lines.

3. A control service to insure a regular flow of convoys was organized.

4. A road repair service for the upkeep of the highway was organized.

Trucks and auto busses were placed at the disposition of the Regulating

Commission as follows: February 20, from St. Dizier, Vitry and Chalons 1,440 trucks, two-thirds being White 2-ton, the remainder, White 3-ton; February 20, from the former II Army, 560 trucks; February 24, from Beauvais, 1,200 auto busses; February 25, from the armies in Lorrain, 400 trucks; a total of 175 automobile sections organized into 51 groups with 300 officers, 8,500 enlisted men and 3,600 vehicles.

Counting original vehicles and replacements, a total of 7,000 was used in this service.

Some idea of the magnitude of the task is realized upon consideration of the accomplishment of the first twenty days. By March 15, 200,000 men, 22,500 tons of munitions and 150,000 tons of stores had been transported.

The French automobile service is organized into two classes of transport, that for the transportation of supplies and matériel, composed of trucks of assorted capacities, and that for the transportation of personnel, usually composed of auto busses.

The basic unit is the section comprising 17 or 18 trucks and one repair truck. Four sections constitute a group, 70 to 80 trucks, commanded by a captain and with the transportation capacity of one battalion of troops or one day's rations for an army corps of two divisions. The group is the tactical unit. The next higher organization is the *groupement* with the capacity of a brigade of infantry.

La Voie Sacrée.—The fight for Verdun in 1916 falls naturally into two distinct phases, so far as the French service of supply is concerned: (1) A defensive period extending from February 21 to June 30, when the supply barely kept pace with the demand, (2) an offensive period extending from August 1 to the end of the year, when by improvement in communications and the completion of a new railway the French were enabled to build up stocks of rations, ammunition and artillery, and engineer matériel to such an extent as to permit them to take the initiative.

The first phase is particularly interesting in that it demonstrates what may be done in spite of great handicaps. A study of the details of French accomplishment during this period furnishes many valuable lessons in methods of overcoming an apparently hopeless situation.

As previously stated, the French staked all hopes of success upon a single line of communication and, in fact, a single highway. Success could be assured only by an intensive organization of this route to a degree never before seen in modern warfare. The problem was attacked with vim, intelligence and determination, and its solution met with an astonishing success.

The route from Baudonviller, the extreme loading point, and Bar-le-Duc to Verdun was the only one which offered any chances of success. This route was divided into six blocks, the service being organized in a similar manner to that on railways. The route was sentimentally and affectionately referred to by the French as "La Voie Sacrée."

The control of travel was assisted by two systems of directive signs; the first permanent and having noted on them prohibitions, route directions, reserved routes, etc.; the second, temporary signboards placed for a few hours only and relating to a special convoy. For example, a certain convoy, say Group A, would leave Bar-le-

Duc for Landrecourt; a light truck would precede the column and at the first road fork would place a sign "Group A"

Follow the

At successive crossroads would be placed additional signs:

Group A

The general success of the plan of operation put in effect was due to the fact that horse-drawn vehicles were barred from this route so that a higher rate of speed could be maintained in the flow of transport than would otherwise have been possible.

It was not unusual for 6,000 trucks to pass a given point in twenty-four hours. The roadway was policed and kept in good condition by gangs of road menders.

Each of the blocks to which reference has been made was under the charge of an officer whose duties were to enforce the orders with reference to circulation, to regulate traffic, to insure expedition, in entrucking and detrucking of troops and the loading and unloading of supplies in his area and to assist in the maintenance of the road with the troops detailed for that purpose. These troops constituted part of the Road Repair Service. One of the officers of this service was attached to the Regulating Commission. The supervisory force consisted of 19 officers and 255 enlisted men, the service force of 5,000 pioneers, giving about one man to each 16 yards of road.

A special telephone and courier service maintained communication along the route.

The crucial test of the transportation system was the ability of the road bed to stand the heavy traffic placed on it, and the gravest possibilities hinged on whether or not it would hold up. Stone quarries were opened at short distances apart along the route, and within forty-eight hours of the inauguration of the new system gangs of territorials armed with picks and shovels commenced the repair work. It was not possible to use road rollers, so broken stone was simply thrown on the road day and night.

There were never more than 1,200 actual workers on the road at any one time, but in six months there were placed on the roadbed some 700,000 tons of broken stone.

In every village en route were repair shops and stores of spare parts, while between villages were hundreds of directive signs.

From the very beginning German aerial attacks on the French lines of communication had been most persistent and had, to a degree, succeeded in interfering with the railway transportation. Against the motor transport system, however, the air service was practically powerless. Direct hits on automobiles or trucks were extremely rare. While an occasional bomb or shell would strike the road, the crater formed could be repaired in a very short time.

Road Maintenance.—In all situations of warfare the question of supply is of paramount importance, and just how the supplies will reach the troops is a vital decision to be made by the commander. Normally all supplies must eventually reach troops by road, but back of the troops it becomes a question of standard-gauge railroads, of light railways, of waterways and of roads. If railroads are used, there must be roads to supplement them to tide over breaks. Due, however, to the enormous tonnage to be transported to meet the

needs of a modern army, the railroad is now conceded to be an indispensable agent, and it does not seem possible that a large army could hope for success without the aid of railways in the rear.

A modern army can proceed no farther when it loses its artillery support, and this support is absolutely dependent upon a transport system to insure continuous supply of ammunition, the bulk of which is so gigantic as to make its transportation for any distance by any means other than standard railways an impossibility.

The French General Staff realized this, and it must have been with a feeling of some doubt and uncertainty that they entered upon this defense of Verdun with their chances of success staked on one lone highway and on their ability not only to provide sufficient motor transport but to prevent this highway from wearing out under the terrific strain of traffic.

The question naturally arises as to why the Bar-le-Duc–Verdun road did not wear out and why the Germans were not able to execute more damage to it than was done, especially in the vicinity of Verdun, where it came under the fire of long-range guns.

In the first place, had the road been built as is the average American road, it would have lasted but a few days. The life of a road with a 12-inch foundation and 6 inches of metalled wearing surface might under constant traffic be only a few weeks, while the consumption of ballast for repair would be hundreds of tons daily for a 30-mile stretch.

The national and departmental highways of France are not infrequently found with a bed of a yard thickness, due to the fact that not only are they made heavy originally, from 16 to 24 inches, but repairs are made by adding fresh stone to the surface. In the wet climate of France the material binds quickly and readily, thus thickening the road bed. This great thickness of metal so distributed the load passing over it that a failure of the foundation is almost impossible.

As to destruction by shell fire or by bombing, experience shows that, except very close to front lines in stabilized situations, little damage is inflicted on roads.

Colonel Caples, Corps of Engineers, U. S. Army, makes an interesting comparison. He states:

> The bombardment and slow barrages accompanying the American attack of November 1, 1918, in the Argonne-Meuse sector were probably the most intense of the whole war. An examination of this ter ain and that of 1916 battlefields around Verdun shows that the damage in two days of the American attack was generally greater and the ground more thoroughly covered with shell holes than was the case around Verdun in nearly a year of continuous battle. Yet, even under this superlative bombardment, the roads suffered very little damage and none that could not be made passable as rapidly as the infantry could advance.

Transportation.—Having a suitable road and having made satisfactory arrangements for its repair and upkeep, the next important problem is to secure the maximum amount of transportation, or at least the required transportation, in orderly and economic movement over the road. It is readily realized that the best road might have a very limited capacity under poor traffic regulations.

With good traffic control, capacity then becomes a function of quality and type of transport; for example, a continuous column of horse-drawn trans-

portation will average 2½ miles per hour on a good road, with a vehicle to each 20 yards, and, considering various classes of army vehicles, will transport an average of one net ton, giving an average of 200 tons per hour. Motor transport under the same conditions will move at 12½ miles per hour, with one vehicle to 75 yards, carrying 2 tons, or 600 tons per hour. A good two-way road operated day and night will have a capacity of 3,000 tons each way by horse-drawn transportation or 10,000 tons by motor vehicles.

The daily capacity of a 60-cm. railway line is 750 tons of heavy munitions, or 500 tons of other supplies.

From the above it may be seen how important the separation of motor and other traffic might become and why the first step of the French was to bar all horse-drawn transportation from the Bar-le-Duc–Verdun highway.

Utilizing only motor transportation a further classification based on the variety of traffic is necessary. To repair the road there must be road parties with their transport; for fighting purposes there will be auto-busses and trucks carrying troops; there will be artillery and artillery ammunition trucks, and trucks carrying small arms ammunition; there will be Signal Corps and engineer vehicles of special types; for subsistence of troops there will be special types of ration trucks and rolling kitchens; and, finally, there will be trucks carrying the ordinary supplies and baggage.

The system of regulating traffic adopted by the French was perfected to a high degree and included not only the roadway, its maintenance and traffic control thereon, but extended to the details of loading and unloading vehicles and to the classification of traffic and methods of handling the various classes.

The first broad classification was the separation of the heavy trucks into two divisions, those employed in the service of the rear—that is, in the transportation of supplies from the railhead to depots—and, second, those with the armies proper and used in transporting supplies from the depots or dumps to the front lines. The first division operated in units, either the group or at least the section; the second division circulated individually or in pairs.

The next classification was in the assignment of vehicles to special kinds of work. Auto-busses and 2-ton trucks only were used for the transportation of troops and were operated normally in groups of four sections of about seventeen auto-busses each.

Going up toward the front, the troops were unloaded, generally on the road via Nixeville or Blercourt, though more frequently at more distant points, depending upon the bombardment.

The 3-ton and heavier trucks were assigned the transportation of munitions and engineering supplies, though, as far as possible, munitions were handled by the trucks of the artillery ammunition trains. Certain trucks assigned to the distribution of such engineer matériel as wire, timbers, obstacles, etc., did not travel in sections but in small groups of not more than three or four trucks each and made their deliveries as far as Faubourg Pave, Marceau Barracks, Bellevue, the forts of Bellevue, Souville, Tavannes, Fleury-near-Douaumont, Fromereville, Cumieres, Marre, Vacherauville, Bois Bourrus, etc. Ambulances moved freely in every direction.

The trucks which were designated for the transportation of munitions and supplies were loaded directly from the railway trains at Bar-le-Duc.

In some cases where the need was urgent, munitions and engineer matériel was not unloaded at these depots but were carried by the trucks directly to battery emplacements or division dumps.

From these depots or distributing points one and two-horse carts operated as far forward as possible, where carrier parties took up the task of getting supplies to the front lines.

Ordinary communicating and approach trenches are the arteries through which supplies finally reach their destination; at the same time these trenches are used for evacuation. But in this sector there was no question of communicating trenches or, as a matter of fact, any kind of trenches, the shell holes being joined up and used to the best advantage for cover.

The difficulties of supply reached their most trying stage in the period March 8 to 11, when the Germans centered their efforts on the village and the fort of Vaux. After the ammunition and supplies which had been stored in advance in Fort Vaux had been consumed, everything had to be brought forward by hand over a most difficult and dangerous trail. Nightly ration parties armed with hand grenades, and bearing on their backs the limit of their carrying capacity in the way of hard bread and canned meats, made their way forward with great difficulty and usually with heavy casualties.

The cisterns of the fort had been systematically destroyed by hostile fire, and the troops were compelled to drink melted snow or secure the water at great peril from a spring in the Fontaine ravine, which was some distance away.

In the movement of personnel forward, the detraining point for trucks was Nixeville, and for trains, upon the completion of the new railway line, at Dugny. The troops were usually marched then to Verdun and there billeted in the citadel and in cellars. Here four days' rations were issued each man before going up to the front.

Reliefs were made at night and generally with heavy losses, due to the continuous barrages in the ravines.

The continuous and heavy bombardment of back areas, and especially of the communications as far as Verdun, made the advance of a unit into the line a perilous undertaking and also a matter of fatiguing labor. In addition to their usual pack and blankets, the men were required to carry all the ammunition and food they could, as the bringing up of supplies for the troops in the front lines was frequently delayed and sometimes completely stopped by the enemy's artillery fire.

While board walks and corduroyed paths were constructed where practicable, normally the long and sinuous files of men, transformed into pack animals, had to find their way through the mist and the dark between shell holes filled with water and across the thick mud.

Food Supply.—Subsistence for men and animals was furnished under the daily automatic supply system. Stores of this class are sent from commissary depots in rear areas to the regulating stations, thence by rail to railheads or distributing points, and there turned over to division or regimental trains. These distributing points are as far in advance as practicable and of a very temporary nature.

The daily ration train carried forward to each division a complete ration of bread, wine, dry vegetables, oats, salt, sugar and coffee. The ration for

daily consumption comprises from 80 to 100 tons per division.

In addition to the daily food requirements, it was necessary to build up small reserves in forward areas to protect against failure of the transport service.

Effort was made to establish regimental dumps comprising two days' iron ration, in addition to the two emergency rations carried on the soldier, and division dumps with two days' iron and two days' emergency rations.

St. Dizier had been designated by G. H. Q. as the regulation station for the 2d and 3d Armies and the Verdun district, but in order to relieve the congestion here the regulating officer at St. Dizier was authorized to apply to the corresponding official at Troyes, the regulating station of the 4th Army, for such supply trains as the former was unable to provide.

The average strength of the armies, thus supplied, amounted to nearly 700,000 men and 225,000 horses.

In addition to the normal ration, the front-line fighting troops were provided with extra rations from the fortress of Verdun, such as tea, chocolate, preserves, tobacco, wine, brandy, lard and fat. Large emergency stocks of canned meats, solid alcohol and hay were sent forward between February 23 and March 9.

During the first four days of the battle subsistence supplies were transported by trucks from Bar-le-Duc, but thereafter the light railway was used for this purpose. The transfer from the standard gauge was made at Revigny whence the light trains, each with a capacity of about 200 tons, or supplies for two divisions, carried the rations to the railhead designated. There the supplies were unloaded on to the divisional motor or horse-drawn transport to be carried as far forward as the hostile fire permitted.

The Ammunition Supply.—The question of keeping an army supplied with ammunition is not easy to plan, as the amount of ammunition used is variable, making dumps or reservoirs a necessity. The flow of munitions to these dumps is as regular as practicable, any excess not used in quiet periods being available in case of unexpected attack or in periods of great activity.

The almost unlimited quantity of ammunition required in modern warfare makes the storage of these shell reservoirs a problem in itself. The actual movement of the munitions depends upon the capacity of the road system and the allotment of transportation to this particular service. It is therefore evident that when an offensive engagement is in prospect, or when a stubborn defense is determined upon, it becomes necessary to anticipate, as far in advance as practicable, the amount of ammunition required and, during the quiet periods, establish dumps convenient to battery locations.

In anticipation of a possible attack, a special supply of ammunition had been allotted the Verdun sector early in February. This allotment amounted to four days' fire for the light artillery and three days' fire for the heavy, a days' fire consisting of 300 rounds per gun for 75-mm. guns; 150 rounds for 90-mm., 95-mm., 105-mm. guns and 155-mm. howitzers; 100 rounds for 155-mm. guns.

Actual consumption surpassed all expectations. Colonel Medina, of the General Staff of Chili, in a study of the use of artillery at Verdun makes the interesting statement that during the first two months of the battle there was

consumed so much artillery ammunition that it resulted in the unheard-of proportion of one artillery projectile for every three shots fired by the infantry.

In the course of the fighting the system of supply was the normal one of replacing daily the reported expenditure of the previous twenty-four hours, as far as the state of stocks at the army reserve depots and demands of other sectors permitted.

The daily allotment varied between 2,000 and 4,000 tons. Daily report of expenditures was made by the 2d Army Staff to G. H. Q. Here, the staff, after considering the relative needs of other units or contemplated operations, informed the regulating officer at St. Dizier of the allocations. Based on this information, the regulating officer made up his trains.

We have already seen how the ammunition was handled from the railheads to the vicinity of Verdun, artillery ammunition train trucks being ordinarily used for this purpose.

From the dumps near Verdun, the ammunition was supplied by horse-drawn vehicles direct to batteries or to dumps near them. In their work the wagons frequently came under the fire directed on the batteries and suffered heavy casualties.

Prior to the opening of the new railroad to Dugny, about May 15, the transportation of the ammunition was carried out as follows:

1. One standard-gauge train of about 250 tons ran to Clermont each day. A part of this was then reloaded on the light railway and the remainder on motor transport and carried to the dump in the vicinity of Dombasle.

2. Three standard-gauge trains of about 800 tons ran to Bar-le-Duc. This ammunition was here transferred to the Meusien narrow-gauge line and unloaded at the army reserve dumps which were located in the Heippes, Souilly, Dugny area.

3. Six to nine trains carrying some 1,500 to 2,000 tons ran to Bar-le-Duc and Baudonvillers and there transferred their loads to the 600 three-ton trucks especially designated to move it to the forward dumps established on the general line Dombasle, Verdun arsenal, Regret, Dugny and Landrecourt. From these locations it went forward either by the continuation of the 60-cm. railway when possible or by horse-drawn ammunition columns of the Corps Parks to dumps north of Verdun, or to battery dumps at times when the need was urgent.

The supply of infantry ammunition, rifle grenades, 37-mm. guns, Stokes mortars, and machine guns followed about the same system as for the artillery. Depending on the situation in each sector, regimental or battalion dumps were established and took the place of the artillery battery dumps. From these dumps the companies were normally supplied by hand.

From February 21 to June 30, 1916, 27,000 ammunition trucks were allotted to the Verdun army: 12,600 for light artillery, 13,700 for heavy artillery, and 700 for miscellaneous ammunition.

These transported 12,500,000 rounds for 75-mm. guns, 165,000 rounds for 65 and 80-mm. guns, 4,300,000 rounds for heavy artillery, 200,000 gas shells, 15,000 rounds for trench mortars, 103,000,000 rounds small arms ammunition.

The Medical Service.—Ambulances used in the service of evacuation were quartered at Bevaux, Rozelliers, Haudainville, Verdun, Sivry-la-Perche, Fromereville, Bethelainville, etc. The am-

bulances moved in every direction, clearing the various dressing stations. Traveling singly they went even to Esnes, Hill 272, Marre, Bras-Belleville quarry and to certain designated points on the Meuse to pick up wounded brought down by water. Much of this work was done by the American Volunteer Ambulance Service.

In the front areas the ambulances and litter-bearers of divisions handled their casualties in the usual manner. In addition to this, clearing stations for sick and wounded were established at Petit-Monthairon, Vadeloincourt and Rarecourt—one for each large fighting group; a second line casualty clearing station at Ste. Menehould, and in the rear stations were opened at Bar-le-Duc and Revigny. Field hospitals were established at Londrecourt, near Beaupre, at Chaumont-sur-Aire and at Froides. The evacuations by motor ambulances sections during March exceeded 100,000 men. Transportation service to the rear was augmented by motor trucks at times, and there were two emergency hospital trains on the light railway to Bar-le-Duc, each with a capacity of 96 lying cases and 200 sitting cases. From the forward evacuation hospitals the sick and wounded were transported by hospital trains under direction of the regulating officer to predetermined base hospitals.

The Influence of the Progress of the Action on the Service of Supply.—The difficulties of supply fluctuated with the fortunes of the front lines. During the critical period of the first week the supply could not keep pace with the demand and with the rapidly shifting lines. The situation was further complicated by the constant flow of additional divisions into the line.

After Fort Douaumont fell on February 25, a more or less stabilized situation existed on this front which, with the efforts now put forth by General Petain, who had taken command on the 26th, enabled small reserves of ammunition and other supplies to be built up so that the French could engage in minor counter offensives.

On March 1, German activity shifted to the west bank of the Meuse, and here the change of the lines and the heavy bombardment seriously interfered with the food supply; the ammunition supply fared better, as the artillery had had time to construct emplacements and to form ammunition dumps near the batteries. It was not until the 14th of March that the lines stabilized on this side.

From this time the situation assumed rather the aspect of a siege, giving the French opportunity to improve their supply service, to build up reserves of ammunition, food and matériel, and thereby to enable them to begin their efforts at regaining some of their lost ground. The bombardment on both sides of the river was most intense during the early part of March and followed the system used in the first onslaught—that is, the heavy artillery would be concentrated on a selected section of front, maintaining a violent interdiction fire on all roads and communication trenches and absolutely paralyzing, for the moment, the service of supply.

During April the Germans made desperate efforts on both sides of the Meuse to force a conclusion, but without success, and now the French started a series of counter offensives on both banks which gradually gained in strength and effect. None of these involved very much movement, so that the supply service was but slightly influenced by

them. Towards the end of April the Germans, from their positions opposite Fort Tavannes, could cover the Meuse bridges with their fire and thus interfered seriously with the movement of troops and supplies to the sector west of the river.

June 8 to August 8 marked the final phase of the German offensive. In this time the Germans were able to force the French out of Douaumont and back on to the Froid Terre. In the center they passed Fleury and were finally stopped at the ditch of Fort de Souville.

Simonds, in his "History of the World War," aptly describes the situation at this period by saying that the military end for the French was attained in June, the moral end in August.

Before the attack in February the nearest point of the German line was at about 9 miles from Verdun, at the end of June about 3 miles.

On April 10 General Petain had been appointed to the command of the Central Group of Armies and was relieved of the command of the 2d Army by General Nivelle.

The French service of supply was never subjected to a more severe test, nor did it ever operate under greater difficulties, than during the period we have been considering. The fact that the Verdun army was provided with requisite supplies of all kinds and that at no time did the troops suffer for food demonstrates that the system of supply was founded on sound and practical principles. This is important to us, as our own system is based on that of the French, and we were able to very easily adapt the experience of this campaign to the improvement of our service of supply.

The success of the system rests on the simple, fundamental principle that troops shall be unincumbered with unnecessary impedimenta and supplies and thus be at their maximum mobility at all times, at the same time making the method of obtaining necessary supplies so simple and direct that any needed articles can be obtained within a very short time.

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Common Sense

A little more of the old-fashioned common sense of our fathers and a lot less of the new-fangled nonsense of our present-day theorists will go a long way towards the solution of the practical problems that today confront our nation and those of the world at large.

Notes from the Chief of Infantry

Winter Sports Training.—In one of our northern posts, great interest has been taken in winter sports. Winter sports have been divided into two classes, as follows:

1. *Compulsory outdoor sports:* Ice hockey (for members of company teams), speed skating, figure skating, ski jumping, skiing (cross country), snowshoeing, curling (for members of company teams).

2. *Recreational and voluntary sports:* Basketball, boxing, wrestling, bowling, tobogganning, indoor polo practice, all sports enumerated in (1) and such others as may be practicable.

The compulsory outdoor sports are part of the military training of the troops. They are designed to accustom officers and men to outdoor life in winter climate and to give them the physical benefits of active outdoor sports. Since they are part of the training program, one instruction period daily is devoted exclusively to them. When the snow is suitable, and in so far as equipment permits, troops taking part in field exercises or other outdoor instruction use skiis and snowshoes, unless inconsistent with the character of work to be done.

Facilities are established for the recreational and voluntary sports, and an officer is placed in charge of each. Those who engage in these sports do so only when not on duty, and under regulations to be fixed by the officers in charge. The recreational and voluntary sports are not part of the training program.

Horsemanship.—Officers of all arms should at least be fair horsemen. During the autumn, in one of our northern regiments, the officers are subjected by the regimental commander to a riding test. Those who qualify are excused from riding instruction during the winter, but those who fail to qualify constitute a winter class for instruction in the riding hall. The test comprises: Saddling; bitting; the aides; walk; trot; canter; modified Russian ride (prepared on a polo field); carrying polo ball across polo field at a canter in not to exceed three minutes, from goal to goal. Prior to the test, officers may receive instructions and may procure horses for riding practice.

Howitzer Training.—In one of our tropical foreign garrisons, gratifying results were obtained by centralized training, in a recent six-week course in 37-mm. guns and light trench mortars.

Prior to the beginning of the six-week course, howitzer companies had instruction in the following subjects:

(*a*) Nomenclature, mechanism and care of the Stokes mortar, fuses and shells.

(*b*) Trench-mortar drill.

(*c*) Direct and indirect laying of trench mortars.

(*d*) Nomenclature, mechanism and care of the 37-mm. gun, gun sights, carriage and ammunition.

(*e*) 37-mm. gun drill.

(*f*) Direct laying of the 37-mm. gun.

Of the regiments concerned, only one or two enlisted men in the howitzer companies of two of these regiments had *ever* seen a 37-mm. gun or a Stokes mortar fired; the other of these regiments had a high percentage of men who had fired both weapons.

During the six-week period of the

encampment the following subjects were studied:

First Week

Stokes mortar emplacements. (One emplacement was constructed by each squad.)

Preparation of range cards and panoramic sketches.

Range tables for Stokes mortars.

Use of quadrant and prismatic compasses.

Direct and indirect firing with Stokes mortars.

Night firing with Stokes mortar.

Second Week

*Map Reading.

*Fire-control instruments.

Third Week

37-mm. gun emplacements. (One emplacement was constructed and camouflaged by each squad.)

Direct fire with 37-mm. guns.

Adjustment of fire (*a*) by searching; (*b*) by bracketing; (*c*) with observer at the gun; (*d*) with observer at flank.

Fourth Week

Direct fire with 37-mm. gun.

Indirect fire with 37-mm. gun.

Fire data determined without the map.

Night firing.

Fifth Week

*Calculation of indirect firing data from the map.

Indirect firing with the 37-mm. gun.

Sixth Week

*Calculation of indirect firing data from the map.

Indirect firing with the 37-mm gun.

Oral examinations on subjects studied previous to the encampment.

Final examinations (oral).

Instruction was given by company commanders, assisted by noncommissioned officers of previous experience, all under the supervision and guidance of the camp commandant. Subjects marked with an asterisk (*) were studied by officers, noncommissioned officers, and selected privates only. Due to the brevity of the course and the desire to give all organizations thorough training in indirect firing, the marksmanship course was not fired with either weapon.

At the conclusion of each subject an examination was held. During the last week of the course all men were also examined in the subjects they had covered before the beginning of the course. Officers from howitzer companies were detailed as examiners and were assigned to examine the men of a company and regiment other than their own. No company was examined by one officer in more than three subjects during the entire course. Marking was on a basis of 100 per cent, 70 per cent being considered a passing grade.

Students attaining an average in all subjects of 90 per cent or better were rated as instructors, those attaining an average of 80 to 89 as assistant instructors, those attaining an average of 70 to 79 per cent were rated as graduates, and those attaining an average of less than 70 per cent were deemed to have failed. Certificates of proficiency were issued to those attaining an average of 70 per cent or better, and certificates of attendance were issued to those attaining an average of less than 70 per cent but who passed on one or more subjects.

Of the 142 officers and enlisted men who received instruction during the course, 5.6 per cent were rated as instructors, 24.7 per cent as assistant instructors, 48.6 per cent as graduates, and 21.1 per cent as failures.

Of the enlisted men taking the ad-

vanced course the following five men made the highest grades:

Sgt. Russell J. Gibbs, Hz. Co., 27th Inf., 94.8 per cent.
1st Sgt. Lloyd H. Griffin, Hz. Co., 35th Inf., 94.0 per cent.
Sgt. Julian Jaroczek, Hz. Co., 27th Inf., 93.8 per cent.
Corp. Lloyd H. Albers, Hz. Co., 27th Inf., 93.6 per cent.
Corp. Lewis J. Fawcett, Hz. Co., 35th Inf., 91.2 per cent.

A New Reveille System.—At one infantry post a new scheme for reveille roll call and breakfast has been put into practice. Although the new system, which is outlined below, is a wide departure from the old, it has several features worth careful consideration.

Under the old system, roll call, coming so soon after reveille, invariably found a large percentage of the men, especially the last-minute risers, falling in ranks partially dressed, unshaved and unwashed. After returning to barracks, the compulsory cleaning of squad rooms left many men in the same condition when mess call sounded. This had a bad effect on the entire unit and lowered the standard. Also, the results of men standing roll call in wet or cold weather, scantily clad, are obvious.

Under the new system practiced at this post, practically all the degrading tendencies are eliminated. First call for reveille goes at the usual time, followed in five minutes by reveille and the reveille gun. Assembly (preceded five minutes by "Attention") and roll call occur 55 minutes later, followed in five minutes by mess call. At first call, men are required to rise. All men must be out of bed before the reveille gun is fired. Reveille discipline is enforced by the noncommissioned officers, who in turn are checked upon by frequent inspection by the officer taking reveille. The one hour from first call to assembly is employed by the men in shaving, washing, dressing, and the policing of barracks. This gives the men an unbroken period in which to accomplish all this. At assembly, all men are required to appear clean, shaved, neatly and fully dressed. They are then ready for breakfast, which follows in five minutes. The officer who is present at assembly goes at once into the dining room to inspect the meal and the neatness and appearance of the men. This system breaks up the old tendency to sleep until the last minute, only to dash out to the first formation of the day half dressed, unshaved, and dirty.

In the summer months, on fair mornings, the band, which messes some distance from its barracks, marches to breakfast past the barracks of the other companies, playing a march. The march begins at "Attention" and terminates at "Assembly." This is no small factor in starting off the day with good spirit.

THE INFANTRY SCHOOL

Termination of Courses.—As recommended by the Chief of Infantry and approved by the Secretary of War, the present school year will terminate about the end of May, 1922.

Officers' Quarters.—A number of officers are building quarters for themselves on the north side of the Red Bone Road. Officers who have already built or bought small quarters in this location have enlarged and improved them, so that Red Bone Road is beginning to look quite attractive in comparison with last year.

Recruiting.—Since the recent resumption of recruiting, a local recruiting campaign has been initiated. Enlist-

ments have averaged from one to four a day. There is a great necessity for enlisted men in the Medical Corps. The Hospital Detachment and the Medical Demonstration Unit are not at full strength.

R. O. T. C.

A Promising Outlook.—From present indications the year's work has begun with promising enrollments in the R. O. T. C. infantry units. There is a decided increase in the number of both college juniors electing to take the advanced course and seniors who are continuing the R. O. T. C. Infantry Course, and who are expected to become candidates for commission as second lieutenants in the Officers' Reserve Corps in 1922, which is most gratifying.

College graduates who have earned the privilege of a commission in the Organized Reserves should not fail to accept a commission if one is tendered at the college commencement. Failure to do so may lose them an opportunity which later may only be regained by undergoing physical and mental examinations.

In Regard to Accepting Commissions.—There is another aspect to the question of accepting a commission in the Reserve Corps, the ethical side. R. O. T. C. graduates are under no duress to accept commissions. They do so of their own free will or not at all. Yet he who accepts material benefits bestowed by a generous nation, and then refuses to perform the patriotic service for which those benefits have especially qualified him, must reconcile his conscience.

The Future of the R. O. T. C. Graduate.—At the present time the world-war divisions are being recreated as the organization of the Organized Reserves progresses. Former officers of those units are welcoming the opportunity to do something constructive for national preparedness. They are energetically working out the rehabilitation of their old companies, battalions, etc., under the direction of the War Department. Ultimately we shall have an efficient Organized Reserve. Once attained, that efficiency must be maintained. How shall it be done? The answer is indicated in the following significant paragraph quoted from a letter recently received by the Chief of Infantry from one of those former world-war officers, who is a reserve officer and a member of a committee working out the details of reorganizing an infantry brigade of the Organized Reserves. The writer says:

> We are going to jump into it as we did in 1917. We older men can only hope to start this work and get a perfect machine working and eventually step out and let *the fine younger men that are coming from the R. O. T. C. camps take their place in these units from time to time,* however the spirit is strong and with it the pride of days gone by in all the services. (Italics our own.)

Not only the eyes of the Government, but those of the men who fought our last and greatest war, are looking to the college R. O. T. C. graduates for the leaders of our future citizen armies.

If you are a member of the Infantry Association you will find in each month's issue of the INFANTRY JOURNAL, in the back part of the book, a section headed Reserve Officers' Department, in which tactical principles are treated of for the benefit of Reserve Officers desiring to pursue a course of study in extension of the manuals, pamphlets, etc., procurable from the War Department. If you are not a member of the Infantry Association, it is suggested that you con-

sider the advisability of joining the association, and if you are interested in doing so, it is advised that you submit your application to the United States Infantry Association, Union Trust Building, Washington, D. C.

Your attention is invited to the announcement contained in the small square, middle of page 29 of the issue of September 10, of the *American Army and Navy Journal*, in the belief that the studies which will be procured in response to that announcement may contain information valuable to infantry officers.

OFFICERS' RESERVE CORPS

Reserve Officers with whom we are unable to communicate.—The following is a continuation of a list showing the name, rank and last address of Infantry Reserve Officers with whom this office has been unable to communicate. The first installment appeared in our issue of September, 1921.

Any person having knowledge of the present address of any of the officers named, will confer a great favor by communicating the same to the Office of the Chief of Infantry.

Name	*Rank*	*Last Address*
Gress, Walter B.	Captain	74 India St., Boston, Mass.
Grevis, Jas. N.	2d Lieut.	March Field, Calif.
Guzman, Jose Rafael	2d Lieut.	26 Fricoche St., Ponce, Porto Rico.
Haeseler, Francis J.	2d Lieut.	229 E. 18th St., New York, N. Y.
Hale, John C.	2d Lieut.	33 W. 124th St., New York, N. Y.
Hall, Jas. H. S.	2d Lieut.	245 Parkwood Blvd., Schenectady, N. Y.
Hall, John H.	1st Lieut.	Gen. Del., Detroit, Mich.
Hanchett, Frederick T.	2d Lieut.	947 Bush St., San Francisco, Calif.
Harless, Harry L.	2d Lieut.	3919 Mt. Vernon St., Houston, Tex.
Harrington, L. W.	1st Lieut.	678 Leffers Ave., Richmond Hill, Long Island, N. Y.
Harris, Robt. P.	2d Lieut.	McDonald, Kansas.
Hart, Arthur M.	2d Lieut.	Ridgeland, Wis.
Harvey, Curtis A.	2d Lieut.	Freeland, La.
Hatfield, Wm. I.	1st Lieut.	Bunkie, La.
Heidenger, Frank C.	2d Lieut.	18 Mary St., Evansville, Ind.
Herrick, Allan	2d Lieut.	Livingston Hall, Columbia University, New York, N. Y.
Hoye, Cecil L.	Captain	723 6th St., Yazoo City, Miss.
Huckleberry, N.	Major	1463 Lee Place, Detroit, Mich.
Huffman, Robt. W.	2d Lieut.	5634 Maple Avenue, St. Louis, Mo.
Hunter, Morton T.	Captain	College Inn Hotel, Seattle, Wash.
Jackson, C. B.	2d Lieut.	Recruiting Station, Newark, N. J.
Jackson, Ralph M.	2d Lieut.	332 Elm St., San Antonio, Tex.
James, Chas. R.	2d Lieut.	67 Whitehall Terrace, Atlanta, Ga.
Jeffries, John H.	2d Lieut.	Lerna, Ill.
Jensen, Axel	2d Lieut.	101 Michigan St., N. E., Grand Rapids, Mich.
Johnson, Ernest J.	Captain	Sgt., A. S. Mechanics School, Kelly Field, Texas.
Johnson, Harry B.	Major	Hulett, Wyoming.
Johnson, John A.	Captain	226 Columbia Ave., Philadelphia, Pa.
Kamp, Walter P.	1st Lieut.	958 Hotel St., Honolulu, H. T.

Name	*Rank*	*Last Address*
Kaufman, Kimball C.	Captain	745 Wesley Ave., Oakland, Calif.
Kelley, Otey L.	Captain	1309 N. Blvd., Baton Rouge, La.
King, J. L.	Captain	1242 Front St., San Diego, Calif.
King, John S.	2d Lieut.	R. F. D. No. 2, Box 156, Annaheim, Calif.
King, Scott J.	Captain	408 W. 7th St., Dallas, Texas.
Koenig, Fred	2d Lieut.	2613 Rusk Ave., Houston, Texas.
Kupferschmidt, R. N.	2d Lieut.	1912 W. Erie St., Chicago, Ill.
Lane, John T.	1st Lieut.	Taft, Calif.
Latta, Wm. H.	1st Lieut.	Route No. 3, McBee, S. C.
Leffingwell, C. W.	2d Lieut.	7043 Emerald Ave., Chicago, Ill.
Levy, Alfred A.	1st Lieut.	6144 Lawrence Ave., Chicago, Ill.
Lewis, Homer N.	2d Lieut.	315 E. 24th St., Univ. Pl., Lancaster, Nebr.
Livingston, A., Jr.	1st Lieut.	Berkeley, Calif.
Livingston, Jack H.	1st Lieut.	8 Pullman St., Atlanta, Ga.
Long, Frank M.	Captain	99 East 81st St., New York, N. Y.
Lopez, Eugene	2d Lieut.	75 Montclair Ave., Montclair, N. J.
Lopez, Rafael	2d Lieut.	6 Morningside Ave., New York, N. Y.
Lupton, John H.	2d Lieut.	812 Potter St., Chester, Pa.
McCarthy, A. H.	2d Lieut.	324 San Carlos St., San Francisco, Calif.
McCauley, Roy E.	Major	306 Villa St., Rocky Mount, N. C.
McKee, Guy S.	2d Lieut.	1608 Barclay St., Baltimore, Md.
McKee, John S.	2d Lieut.	Sanderson, Texas.

Magnitude of Our Cereal Crop

One year's harvest of our cereals would fill a canyon 100 feet wide, five miles long, and two-thirds of a mile deep.

The *Scientific American* estimates that this harvest of a single season in the United States, if stacked on one acre of land, would form a column 214 times as high as the Woolworth Building in New York. Or it would bury the whole of Central Park to a depth of 190 feet.

If this crop of cereals were to fall upon Manhattan Island like rain at the rate of a million bushels a day, starting tomorrow, it would not cease falling until the year 1930.

Varied Ground

Organization of a National Guard Regiment

At the conclusion of the war, Missouri began the reorganization of the National Guard, an effort being made to reorganize the old regiments as they existed in the state previous to the war. In Kansas City there was organized, during the war, the 7th Infantry, Missouri N. G., the terms of enlistment of which did not expire until March, 1921. The men of this regiment felt that they should have been discharged at the conclusion of the war as they regarded their National Guard service was for the emergency, but since there was no National Guard organization in the state, those in authority felt it necessary to maintain the regiment. On account of this disappointment at not being discharged, the morale of the regiment was low and service men did not take to the idea of enlisting in what had been a home guard organization, even though it had been an excellent one.

The colonel of the regiment resigned, and the governor and the adjutant general of Missouri and business interests of Kansas City felt that the regiment should be commanded by a service man who would attract service men to it and gradually reorganize the regiment on a more permanent basis. Col. Edward M. Stayton, who had had many years' service in the regiment previous to the war and who was with the 110th Engineers during the war, was selected to command the regiment. Immediately on his taking command a number of officers and men who had seen service overseas accepted commissions in the regiment, as well as numbers of non-commissioned officers. One of Colonel Stayton's first acts was to change the designation of the regiment to the 3d Missouri Infantry, thus indicating that a real reorganization of Kansas City's old regiment was in progress.

The summer camp in 1920 was an excellent one, although it was difficult to enforce the attendance of many men who felt that they should not be called upon for further service. The economic conditions were such at that time that every available man was needed for work, and it was difficult, and in most cases impossible, to persuade business firms that they should encourage their men to attend the camp. Colonel Stayton, however, insisted that every man attend the camp and was reasonably successful in enforcing such attendance.

Immediately following the camp Colonel Stayton went to the Chamber of Commerce and explained the situation thoroughly, also the regiment's needs, and asked for the appointment of a 3d Regiment Committee. This was immediately appointed and Mr. George H. Edwards, a former mayor, was placed at its head. Mr. Edwards and Colonel Stayton spent several weeks addressing the different civic clubs and organizations, explaining the needs of the regiment and the kind of support that Kansas City ought to give it. The result was that practically every important business firm in the city signed an agreement with the Chamber of Commerce that they would encourage a reasonable number of their young men to enlist in the regiment; further, that while in military service their employes would

lose no pay, promotion privileges or vacation privileges and that, as a matter of fact, they would look with favor upon a man who was willing to serve his city and state in the ranks of the regiment. Systematic recruiting was then begun, no spectacular methods being used. This steady grinding along permanent lines secured a reasonable number of desirable young men every month. As time went on recruiting became more and more effective.

In the early part of 1921 the Militia Bureau and the Adjutant General of the State of Missouri worked out a plan covering the number of organizations and their character that should be organized and maintained in Missouri. Among others was a regiment of Engineers. It was believed that, owing to the armory facilities, population and other features prevailing there, that Kansas City was the proper place to locate the regiment of Engineers, and the 3d Infantry was therefore converted into the 3d Combat Engineers, Missouri N. G., with the national designation of the 110th Engineers. Immediately after the conversion of the regiment recruiting became very easy, and the regiment entered upon a steady and permanent growth.

In the meantime each of the different civic clubs had adopted a company, assisting in its recruitment and supplying athletic equipment, looking after its club features, etc.; in fact any needs not provided for from the state or government funds. In this way each company was equipped with a splendid baseball equipment costing several hundred dollars. The armory was well equipped with athletic equipment of all kinds, and the Chamber of Commerce offered a large number of expensive prizes for athletic events to be held during the summer camp. The result of all this was that, before the time for the camp, the regiment was recruited over the strength allowed for the National Guard and actually went into camp with a few more men than the tables of organization permitted.

In a very short time a bond issue covering a number of important projects needed for the development of Kansas City will be submitted to a vote of the people of the city; among these is a half million dollar armory. These projects have been endorsed by all of the civic clubs of the city, and there seems little doubt but that they will meet the popular favor on election day.

The growth of this regiment is a clear indication of what may be accomplished when the regimental authorities, the officers of the local administration and commercial and civic organizations all get together on a progressive plan of maintaining an efficient organization in the interests of the city in which it was located.

* * *

A mountaineer of one of the back counties of North Carolina was arraigned with several others for illicit distilling.

"Defendant," said the court, "what is your name?"

"Joshua," was the reply.

"Are you the man who made the sun stand still?"

Quick as a flash came the answer: "No, sir; I am the man who made the moonshine."—Washington Post.

* * *

The Army and the Peop'e

THE EDITOR:

This letter is written with the sole

end in view of "trying to start something" and also with the sincere hope that whatever it happens to start will be for the good of the Army—and for the public. The writer is a very junior officer, having had only three years' enlisted service in the National Guard prior to 1917 and four years' commissioned service since June, 1917, but he has one thing in common with every one in the Army, and that is the success and welfare of the Regular Army. So for the sake of the profession which he has adopted as his own, this article is written, and a prayer goes with it that it may in some way help towards a solution of what appears to be a serious problem.

Why cannot a soldier in the Army of the United States pick up a paper, any daily paper published in the United States, without seeing staring him in the face anywhere from a paragraph to a column of abuse of the Regular Army? Why do business men, professional men, clergymen, congressmen, and in fact men of every walk of life, appear to take such delight in knocking the Army and all things connected with it? Is it because we who make up the Regular Army become different when we put on the uniform of our country? Because we have elected to devote our lives and education to a study of things military in order to be of use to our country in her time of danger, are we tainted with leprosy or other loathsome disease that we forfeit all right to consideration and equitable treatment? Are our mothers, wives, sweethearts different from the mothers, wives, sweethearts of the John Smiths and Paul Jones who do not belong to the Army? Are our homes different, our pleasures, our hopes, our fears, our worries and the hundred and one little things that go to make up the life of the ordinary human being, different from those of the people who do not belong to the Army? I do not think so, and yet, from the never-ending and constant abuse of me and my friends, it appears sometimes to a puzzled mind as if we were. Sane, common-sense thinking tells me that the soldier is just as human as the man who is not a soldier. We in the Army know we are the same as other men, but apparently no one else does. Then, why cannot we start a legitimate, friendly campaign to become acquainted with these other people who are now abusing us and show them that the ones who salute the flag with the hand salute are the same kind of human beings who salute the flag by raising the hat?

There were about 200,000 officers in the United States Army during the past war. A few Regulars, many National Guard, and the most of them Reserve and National Army. By executive order these four groups were made one and as a whole cooperated so successfully as one that the war was won. Since the war, though, charges and countercharges have been made without end that one group did this and that another group did that, and so forth. It is not the purpose of this article to find excuses, extenuations or reasons for or against any of these numerous charges. But the war is over, and the public has apparently grown sick of the arguing and bickering and through its representatives in Congress has decided to do away with at least one part of the controversy, namely, the Regular Army. You who are reading this do not want to see that happen. We do not believe it should happen. We know that it

should not happen. But we cannot stop it by sitting supinely by and wishing it not to happen. We must take the initiative and act, and act pronto. The Regular Army is being blamed for lots of things, and whether it is just or unjust makes no difference. It is a fact that we must face. Not only must we face it fairly and squarely, but we must start right in now and try to educate the people to a better and broader understanding of us and our ideals.

One of the main criticisms of the Army by those not in it is that we are too exclusive and do not care to meet outside people. This feeling of the people has gone on for so long that it is to a great extent true, and a sort of invisible barrier has grown up between the people of an army post and the people who live outside. You who read this and ruffle up to deny it, stop a minute and think of all the posts you have lived in and think of how many people of the surrounding country you really knew and were friendly with. Were outsiders ever really wanted at the post affairs, or were the officers who occasionally did invite civilians not rather considered as sort of crazy? Again I am not going to try and make any excuses for or against. I am just trying to set forth the facts as I see them. Certainly no one can deny the actual facts of hostile legislation against us now. Now is it not reasonable to believe that if this "barrier" were removed, and more intimate relations were developed between the army people and the people not in the Army, that after awhile a great deal of this hostility would die a natural death? It is only human nature that a man is slower to believe ill of a friend than of a total stranger. It is not only human nature but a well-established fact. Then why not apply that in our own particular case?

If Mr. John Smith of Chicago, on his way to Fort Sheridan to have dinner with his friend Cap. John Smith of the Army, reads in the paper that the army officers are a bunch of parasites on the government payroll and a useless part of the United States population, he will hold his judgment until he is enjoying an after-dinner cigar in his friend Captain Smith's house, and then he will probably talk things over. When he finds that Captain Smith puts in eight to twelve hours a day work and study and is not a fire-eating idiot thirsting for war and glory (?), but is a conscientious family man doing his duty as he sees it and preparing himself to be of use to the country when he is needed, then the chances are that Mr. Smith will sort of wonder about the man who made the remarks in the paper—and the paper will probably come off second best. Also when Captain Smith sees the paper he will probably not be so discouraged, and, thinking of Mr. Smith, will feel sort of cheered up to know that the Army has one friend anyway. In these days even one friend is not to be despised. Multiply this little fairy tale by the number of officers spread all over the country, and is it not fair to hope that gradually a more fair opinion of the Army will be formed?

Now what is this letter driving at? What is all this about? Just this—that it is believed that everyone concerned can be helped by a determined "friendship drive" by the officers of the Army. There are innumerable ways in which this "drive" could be accomplished, but for a starter why cannot every post in

the United States have at least one big social affair every three months in which it would be the duty of every officer to bring as his guest one outside family and take pains to see that they meet every officer's family. In addition, invite all the National Guard and reserve officers in the immediate vicinity, ask them to wear their uniforms, and make them feel as if they really and truly belonged to the Army? Many pleasant and enjoyable friendships would be formed in this way, and gradually people would begin to feel that, after all, the Regular Army was an integral part of the people of the United States. A step in this direction has already been taken by the reserve officers of Minneapolis. Those officers, for their own benefit and pleasure of knowing one another, have formed the Reserve Officers' Club of Minneapolis, and meet at a luncheon, I believe, once a month. They have made the army officers of Fort Snelling either regular or associate members and requested them to attend the monthly luncheons. If they can do a thing like that in order to meet us, why cannot we do something similar in order to meet them? Another way is for the officers who are university men to try and locate college mates and fraternity brothers. In fact, any way in which we can meet these people not in the Army and show them that, in spite of stories, reports, etc., we are human like themselves, just as hard working and just as home loving, will be a step in the right direction, and in the end will be of benefit to them and to us.

Why not try it? Let's Go!

G. S. McCULLOUGH,
Captain, Infantry.

Headline—Two Railroad Stations Robbed. The railroads must be getting into much better shape financially.

—

It's a wonder some genius doesn't come forth and advocate government control of the bootlegger. We have had control of everything else under the sun, proposed.

—

The chief complaint of Austria seems to be that the small territory left to her will not support Vienna in the style in which she was raised.

* * *

Effect of Limitation of Armament on War

THE EDITOR:

It is yet to be demonstrated that limitation of armaments, with its evident corollary, disarmament, will be a preventive of wars. The past history of the human race, however, will recall to our minds an abundance of extremely desperate and bloody wars, waged with primitive armaments.

One hesitates to declare, remembering the events of the last seven years, that humanity has as yet made any remarkable progress towards that perfection of soul, that meticulous regard for the rights of others, that will prohibit nations from having recourse to force in the upshot, providing they have a fair chance of "winning out." No. It is to the hearts of men and to the consciences of nations that we must look for the reformation, not to the weapons with which they may be armed. On the other hand, given a just cause, a man or a nation is going to fight for it, and, if the morale be good, the fight will be long and bitter.

Those who argue the World War

was caused by the vast forces maintained by France and Germany, and that the very creation of those stupendous military machines was enough to terminate the forty-four years of peace that had existed between those two countries, might perhaps with greater justice reflect that, had those military establishments been less strong and capable of being mobilized at less expense, the forty-four years of peace could easily have been forty-four years of intermittent warfare, characterized by border forays, raids, and an annual operation of larger scope such as the siege and reduction of a city. The world has seen a Thirty Years' War and a Hundred Years' War, but they were at a period when armaments were simple, when there was no regular system of drill or tactics, when discipline was lax, and these factors tended to make war a long-drawn-out affair.

If armaments be reduced to the simplest form imaginable, will not the inevitable result be to render an appeal to arms a vastly easier and less expensive proceeding than it is today and, as a consequence, render wars, instead of costly undertakings only to be considered as a last resort, something that could be as quickly inaugurated as economically prosecuted? It is doubtful if Rome could ever have achieved her complete conquest of the world if the equipment of the legionary soldier had consisted of anything more costly than a sword, a pilum and a superficial body protection of steel plates and leather.

We hear much of the destructive effects of modern weapons, of the horrors of modern combats, that the romance has departed from war and nothing but the beastliness of contending factions remains. These utterances come mainly from sentimentalists of the class who instinctively shrink from conflict and would be glad to purchase "peace at any price." At certain periods entire nations have been permeated with this pernicious doctrine, but such nations, it has been observed, in abandoning the essential elements of self-defense, have found to their great cost that they have also lost all faculties of thriving by the arts of peace. The populace of Constantinople prior to the sack of that city by Mohammed II, the aborigines of certain of the West Indian Islands, the native tribes of Bengal and the present denizens of China seem to be apt examples of this school.

As a matter of fact, modern wars, considering the numbers engaged on either side, are not a whit more destructive, the percentage of casualties no greater, than at any previous period of which authentic statistics exist. We do not know that it is any worse to be hit by a steel jacketed bullet than by a rock from a Roman ballista, or that death by suffocating gas would be more terrible than death from a bucket of boiling lead from a medieval turret, or that a bayonet thrust hurts more than a gash from a Saracen's scimitar. As to modern wars being more severe on noncombatants, we have but to refer to the atrocities invariably practiced upon the inhabitants of cities taken by storm in past ages to realize the error of such teachings.

War remains what it always has been—something that we do not like and do not want, but there invariably comes a time when war remains the lesser of two evils. Until the day dawns when the Golden Rule becomes the general practice of nations as well as of individuals, the country that neglects to arm

and train its man power will find its last state worse than its first. As to America setting the example in disarmament in the expectation that the world will follow suit, that is precisely what we always *have* done, and at a dreadful price, both in money and men.

When will the lesson be learned? We pursued a consistent policy of disarmament from 1914 to 1917 and then declared war, and more than a year elapsed after the declaration before we were able to exert any appreciable effort on the battlefield. It would seem that such a lesson ought to bear good results in future plans for preparedness. It remains to be seen if we will profit by experience and never again permit this nation to be in such extreme jeopardy as it was from April, 1917, to July, 1918.

James W. Burrows,
Captain, Infantry, R. C.

* * *

The beautiful array of soft drinks dispensed at the average fountain is evidence that Germany has no monopoly on the dye industry.

—

Out in Oklahoma the men signed an agreement to wear their old clothes. The Army is doing the same thing without any agreement to the effect, until the war-time "shoddy" is used up. The new system of clothing allowance for the soldier will help matters a lot.

—

The country hopes that the railroad men have come to a realization that it is the runs and not the sthikes that will win the game.

* * *

Two Ghosts

During the war Rastus was given post number 8 which ran through an old graveyard. As a special order he was told to call the corporal of the guard upon the appearance of any ghost. Rastus had been in the Army long enough to have had discipline instilled into his soul, and while his teeth chattered when the wind howled in the tree tops, still he was determined to guard that post, dead or no dead.

At midnight he stumbled over a grave and almost fell, as not twenty paces away, from the thin air, appeared a white-hooded figure with luminous features.

"Who go—go—goeth there?" he stuttered.

"I am my father's ghost," came in sepulchral tones from the apparition.

Rastus chuckled inwardly as he recovered his composure. He had glimpsed khaki cloth between the folds of the sheet around his visitor.

"Corporal of the guard," he shouted, "Post number 8, two ghostes." Then speaking to the shrouded figure, he said: "Boss, if you is a ghost, you better be gwine from here; if you aint a ghost, you and your pa's gwine spend de balance of de night in de guardhouse."

* * *

To get our interest out of Europe we will have to take a lot more interest in her.

—

The money we have been saving for a rainy day has already lasted for several rainy months. We wonder how long it will continue to rain.

—

Life for the average man is very simple. All he has to do is earn enough money to support his family, pay the wage demands of organized labor, and produce the dividends for corporations. Simple life, isn't it?

Seal Hunting with Airplanes

A Newfoundland sealing captain who had returned to his calling from the war had watched the airmen hunting down U-boats among the grey wastes of the North Sea. He became aware of a certain similarity to his own business of sealing. There is something of the seal in a submarine, more than the fact that their habits are similar. The sealing captain put two and two together. An aerial observer who could spot the elongated form of a submarine from a distance of 40 miles at 5,000 feet should add many hundreds to the catch when it came to seal-hunting.

His idea materialized, and in March of this year there arrived at the Bay of Exploits, northward from which lie the great sealing grounds, a small party of British airmen. Led by F. S. Cotton, a young Australian, this party included another and a spare pilot, a couple of mechanics and two machines, and forthwith they got to work erecting their hangar on the shores of the bay.

Within a few weeks they were flying out hundreds of miles over the ice, cooperating with the ships in the sealing. In all, they covered 2,000 miles of the icefields, or something like 20,000 square miles, in the first expedition, one flight taking them very far from their base. The aerial cooperation assisted in a catch of 110,000 seals.

Belle Isle is the center of the great seal fisheries. There the seals pass the winter. There the flipperlings (young seals) are born, and from there, as the ice begins to break up with the spring, they and their parents come floating southward on huge blocks of ice. Every year, as regular as clockwork, towards the end of February the ice-floes start floating south. Every year, between March 21 and March 25, the entire seal nursery arrives off Fogo, where the sealing fleet waits their arrival.

The actual bagging of the seals is a comparatively simple matter. Immediately they are sighted, the entire ship's company take to the boats, and, clambering on to the ice, club the seals over the head, skin them, and haul their skins and fat back to the ships, at the rate of thousands a day.

Like the old proverb, though, you must first catch your seal "before you sell his skin." In these vast seas it is no easy matter to track down even an army of 100,000 seals. From the time that the ice-floes arrive until the seals take to deep water again, far beyond the hunters' reach, is only a matter of a few weeks at most. In that brief spell either the sealers have made their catch or they return to harbor emptyhanded for another twelve months.

Sealing is one of the mainstays of the island. A bad season entails much poverty and hardship, and during the last few years of the war the sealing business went from bad to worse. Another bad season would have meant bankruptcy for the sealers, and so they called in the wonderful observational powers of the aircraft.

On a clear day, and from a height of 5,000 feet, the airmen had a view over the ice that extended to Belle Island, 150 miles away. At the same altitude it was possible to make out the dog teams on the surface of the ice below with the naked eye. Usually, however, the weather conditions the airmen had to endure were little short of appalling. For the most part the temperature stood at zero or below. Frequently they were forced to bring the machine down on

the ice, while a great deal of their time was spent in dodging blizzards, at the first sign turning and racing for the shore at full speed. Had they been overtaken by one they would never have returned to tell the tale.

So in their log-book we find the following typical entries: "Blowing very hard. . . . 9 p. m. Blizzard. . . . Ice two feet deep. . . . Wind blowing about 90 m. p. h., could see nothing. . . . March 20, Made three attempts to get machine up from the ice. . . . Forced landing two miles out in the bay. . . . warmed engine up with an oil lamp, etc. This warming up was a frequent occurrence in a climate where boiling water froze stiff as it was poured out from a can, and the only way to get it into the radiators was actually to heat the metal parts of the engine.

To return to the log-book. One frequently runs across phrases like "A forced landing two miles out in the bay." Such landings were made on the surface of the ice at a speed of over 45 miles an hour, the machine not pulling up for 100 yards. Naturally, mishaps occurred—fortunately, none of them serious. Tail skids would snap, and once the machine became so firmly embedded in a heavy snowbank on the ice that it took three horses and a dozen men the best part of six hours to drag her free again.

Last sealing season the gales were the worst within living memory of the islanders. The inhabitants took to their huts and did not venture forth again till the fury of the storm had vented itself. All the trains were snowed up for over a month, and the aeroplane was the only means of transport available. In the midst of the sealing work an urgent wire was received from the Postmaster-General of Newfoundland to fly out with a mailbag to St. Anthony, an outlying island. Despite a heavy snowstorm, the bag was delivered, and the plane again returned in safety.

The machine that Mr. Cotton was flying was a Westland, fitted with a Napier-Lion engine. In this same machine he made his famous flight 320 miles out and home across the ice fields.

That day they carried an experienced sealing captain aboard, and he was able to track down the seals by certain signs on the ice surface. It was encrusted all over with low, blunt ridges, or "pancake" ice. The prevailing wind was westerly, and, as neither of these conditions was conducive to a lair for young seals, he same to the conclusion that they had passed below a few hours previously and were now making off eastward for deep water. Shortly afterward they flew near the sealing fleet itself. They signaled to it by wireless: "Turn about! Sail east! The seals have passed below and are now making for the open sea." The sealers took the hint. Within twenty-four hours their catch totaled 110,000 seals.

Meanwhile, warned by change of wind and gathering clouds that a dreadful blizzard was approaching, the aeroplane turned for home at top speed. Barely had the airmen got the machine within its hangar before the blizzard broke, within a couple of hours piling up many feet of snow against the doors.

Nothing daunted by these adventures, Mr. Cotton is off again in a few weeks' time for Newfoundland. Next sealing they anticipate being at work weeks before the ships go out, and in the meantime are to give the fisherman a hand in spotting cod and take a turn with the whalers, out after seacows and

humpback whales. An aerial mail service across the bay to Labrador is yet another experiment at which they are going to try their hand during the summer months.

* * *

The doctor was giving a lecture to a class of girls.

"Also," he remarked, "it has been found that the human body contains sulphur!"

"Sulphur!" exclaimed a pretty young girl. "And how much sulphur is there in a girl's body?"

"Oh, the amount varies," said the doctor, smiling, "according to the girl."

"Ah!" remarked the girl. "That's why some of us make better matches than others."—Washington Post.

* * *

The Guardsman

The Guardsman is a bright little paper published by the 160th Infantry, California National Guard, at Los Angeles, Cal. The first number has come to our hand. It is filled with good material that should be in the hands of every National Guardsman in the service.

The paper is edited by the commanding officer of the regiment, Col. Walter P. Story, who is ably assisted by Cap. Clarence O. Hively. Maj. Robert C. Cotton, Infantry, who was formerly editor of the INFANTRY JOURNAL, is on duty with the regiment and has contributed some good material to this number.

We bespeak success for *The Guardsman* and congratulate the founders of the paper on their enterprise. The paper will be one of the very best means that could be devised for keeping the members of the regiment in touch and interested in the service.

The one-piece bathing suit is not immodest simply because it happens to come in one piece. The propriety of a garment for water wear or for beach wear is not measured by the number of pieces.

—

It is interesting to observe the results of the prevailing enthusiasm for the study of chemistry. The search for new explosives is as nothing compared with the search for new ways of getting an internal "kick."

—

Keen, eager observation is one of the standard methods of increasing one's knowledge. Keeping one's eyes wide open helps to open one's mind.

* * *

Transfer of Reserve Officers

It is the policy of the War Department to minimize administrative action by making transfer of reserve officers coincident with their reappointment, at the expiration of the five-year term for which all reserve commissions are granted, and requests for transfer should be submitted accordingly. Transfers at other times will be made if exceptional circumstances demand. During the period of formation of units of the organized reserves, any transfers necessary to facilitate the organization and officering of such units will be made.

Transfers from section to section of the Officers' Reserve Corps may be made without change of rank or date of commission, when it is apparent that a change of section is for the best interests of the Government and the individual. Should a reserve officer, for physical or other reasons, cease to be suited for combat duty, he may by transfer be retained in the service

for some other duty for which fitted. Similarly, officers not appointed for combat duty may, by taking advantage of all opportunities for instruction, fit themselves for duty and, by transfer to a suitable section of the reserve, increase their value to the military establishment. Transfers will be made only with the consent of the officer concerned.

* * *

Teacher—Children, a planet is something we live on. Name another.

Abie—My grandfather, he vuss a planet!

Teacher—Your grandfather?

Abie—Sure, vee lived on him fer years!—Vaudeville News.

—

Teacher—Do you know what the Order of the Bath is?

Mickey—Sure, ma'am. In our house it's Katy, then me brudder, then me.—Butler Collegian.

* * *

Improved Gas Masks

Important changes and improvements recently have been made in the design of gas masks for use by the Army and Navy. This has been done at the chemical warfare plant at Edgewood Arsenal, Md., where there has been a reorganization in order to attain maximum production.

Probably the most important development is a new carrier, which does away with the necessity for two positions in wearing the mask and leaves the chest clear by placing the mask, when not in use, under the left arm. During the war, the cumbersomeness of the old mask carrier was recognized, but, as it served its purpose, no change was made at that time.

Another important improvement is a waterproof packing case for complete masks and extra canisters, a waterproof paper liner being used and sealed around the mask and canisters. The case is designed to protect masks in overseas shipment and in storage in tropical countries.

Numerous other improvements have been worked out in connection with the mask itself and in the machinery for its production at the mask factory at Edgewood Arsenal. This factory has produced 120,000 masks of the 1919 model and the same number of canisters, the latter containing extra charges of chemical and absorbent used in the masks.

* * *

Professor (in history): How many wars has the United States had?

Student: Five.

Professor: Enumerate them!

Student: One, two, three, four, five!

—Lehigh Burr.

* * *

The International Team Match

The International Team Match for 1921 was won by the American team at Lyons, France. The team, composed of officers and enlisted men of the Army, Navy and Marine Corps, the National Guard and civilians, went to Europe on the battleship *Utah*. After a week's practice on a range of the American forces in Germany at Coblenz the team went to Lyons and participated in the international matches.

The personnel of the team was:

Lieut. Col. Oliver F. Snyder, U. S. Army, retired, team captain. Colonel Snyder is on duty with the National Board for the Promotion of Rifle Practice. He was the team captain of the A. E. F. pistol and revolver teams in

1919 and the American Olympic pistol and revolver teams in 1920. He is both a distinguished marksman and distinguished pistol shot.

Commander C. T. Osborn, U. S. Navy, is one of the best rifle shots in that service. He won second place in the individual match. He was a member of the Olympic team in 1912 and again in 1920.

Mr. W. R. Stokes, who is a law student at the George Washington Law College, won the International Individual Championship of the world with the enormous score of 1,055 points. He also won handsome medals for making first place in both the standing and kneeling positions. He today has the distinction of being the world's best rifle shot.

First Lieut. A. D. Rothrock, U. S. Infantry, is one of the best shots in the Army. He was a member of the Olympic team of 1920.

Master Sergt. James Christian, Coast Artillery Corps, is a distinguished marksman and has the distinction of making the highest score of a string of ten shots in the prone position that was made at the shoot. This was a score of 97 points out of 100.

Sergt. Morris Fisher, U. S. Marine Corps, who came out in third place on the team, is one of the best shots in the corps. He was a member of the 1920 Olympic team.

The team brought back with them the handsome $10,000 Argentine Trophy, which has been held by Switzerland for the past seventeen years. They were also awarded a wonderful bronze trophy by the Government of Italy that is said to be valued at $2,500. This latter becomes the property of the American National Rifle Association.

The team used Remington Cal. 30 Springfield 180-grain Palmer-Olympic match ammunition, with a heavy pressure barrel Springfield Rifle made especially for the team by the Ordnance Department.

The international match will be held for the next three years as follows: 1922, at Milan, Italy; 1923, the United States; 1924, at Paris, France (Olympics).

The following tabulation shows the scores made by the several teams entering into the shoot:

America				
Name	*Stand*	*Kneel*	*Prone*	*Total*
Stokes	326	357	372	1055
Osborn	322	341	369	1032
Fisher	290	331	369	990
Christian	299	304	372	975
Rothrock	277	319	367	963
Grand total				5015
Switzerland				
Hartmann	324	348	342	1014
Zimmerman	322	330	352	1004
Amoudruz	314	333	338	985
Hanni	299	338	342	979
Zach	302	321	328	951
Grand total				4933
France				
Colas	288	311	354	953
Roes	302	308	334	944
Johnson	300	314	317	931
Parmentier	271	297	332	900
Percy	267	297	317	881
Grand total				4609
Italy				
Isnardi	300	330	336	966
Ticchi	299	313	342	954
Frasca	279	315	353	947
Micheli	256	291	325	872
Loreni	255	263	318	836
Grand total				4575
Netherlands				
Vinermann	303	325	318	946
Durang	295	316	306	917
Eggens	278	295	314	887
Van D. Bergh	216	315	337	868
Scheuter	261	301	284	846
Grand total				4464

American ideals include square meals. That's the reason a lot of foreign peoples respect them.

—

When everybody has more of this world's goods than everybody else, then we'll all be happy and contented.

—

The Bolsheviks use Karl Marx in theory; German and Polish marks for commerce (?); and American and British easy marks for victims.

* * *

Infantry Team Fund

The following contributions for the Infantry Team Fund are hereby acknowledged:

Previously acknowledged....	$1,159.51
Tank Center, Camp Meade, Md.	47.00
Lieut. S. P. Powers.....	1.00
Total	$1,207.51

A detailed statement showing the expenditures from the fund will be published in the INFANTRY JOURNAL as soon as it can be prepared for that purpose. The fund has been of great assistance to the team and enabled it to do many things that would have had to be left undone had it not been available.

A skin game. A Virginia farmer sells the hide of a calf for $4. The next day he goes to town and buys a pair of shoes for the wife that cost him $12.

—

Prohibition is bringing a lot of sunshine—and probably some moonshine—into many homes.

—

Even with flivvers turned out at the rate of a million a year, there will hardly be a sufficient number to match one to each joke.

* * *

Notice

Beginning with the December number of the JOURNAL a series of articles on "The American Expeditionary Forces in Europe, 1917-1918," by Maj. Herman Von Giehrl, will be published.

These articles originally appeared in the German publication *Wissen and Wehr* and were translated by the G-2 Section of the A. F. in G. and published in their weekly bulletins.

It is through the courtesy of Maj. Philip H. Bagby, G-2, that the JOURNAL was able to secure the complete set of bulletins, and to him we make acknowledgment of our appreciation.

Too Many Ribs

A woman in York, Pa., has been found to possess one rib too many, says the Philadelphia *Record*. We once heard of a man similarly afflicted who got the entire world into trouble as a result.—*Life*.

Editorial

Disarmament

There is a lot of loose talk these days on the subject of "disarmament," and the purpose of the coming conference is being confused with that term in many quarters.

It is not a "disarmament" conference in any sense of the word. One of the subjects that it is proposed to discuss is that of the "limitation of armaments."

All sane thinking men agree that the world is not yet ready for a general disarmament.

Collier's Weekly is one of the numerous publications that are making a great "to do" about disarmament. A recent issue contained the following sample:

GUN TOTING

If Deadwood Dick carries six guns, then Alkali Ike of necessity must carry six. If Deadwood Dick buys four more, Alkali Ike has no recourse but to add four more to his own arsenal—if he goes broke by doing it.

But if the two men meet and agree to drop back to a one-gun basis, both gain and neither loses. After a time they may agree to quit gun toting entirely.

Let us carry the argument a little further. Let us assume that the two gun toters finally agree to disarmament and surrender their shooting irons to a committee of the "leading citizens" of Silver City.

Things move along in a routine way. Do Deadwood Dick and Alkali Ike stop making faces and slandering each other? Nothing was said about that when they handed over their hardware, so they go on having their differences as usual —with the difference, that instead of settling them with guns they take to fist fighting, shin kicking and biting. It's the same old game, only a little less dangerous to the participants.

Let us say that one of them, Deadwood, is a better man physically than the other, Alkali. Alkali finds himself continually getting the worst of these fisticuffs. After standing it to the limit of his endurance, Alkali digs up an old gun that he has had cached away in his shack. The next time the two have occasion to debate, Deadwood finds himself looking into the barrel of Alkali's six shooter. He has nothing but his bare fists, and they are discounted by a gun in the hands of a ruffian who knows how to shoot and is ever willing to shoot at the drop of a hat.

If he is wise, Deadwood will postpone further argument—until he can prepare. Otherwise it is more than likely that the "boys" will bury him "with honors" this afternoon, the victim of his own credulity.

Let us assume that Deadwood has used ordinary discretion and that the affair is patched up for the time being with great loss of prestige, if nothing more, to Deadwood Dick.

Alkali Ike is a fellow that takes no chances.

What happens? There is a mad rush to arms. Each man gets both fists full of guns, with a reserve in his belt—and the situation is back where it started.

The Infantry in West Virginia

Again the Regular Army has justified its existence and demonstrated its

usefulness. This time its field of endeavor was in the great coal regions of West Virginia, where several thousand armed miners had assembled for the purpose of invading a mining territory that is opposed to the miners' union.

When the situation got beyond the control of the state authorities and a call for Federal troops was made by the governor, General Bandholtz was sent to West Virginia to make an investigation and report. He went to the disturbed region and found several thousand miners marching from Kanawha County towards Mingo County as a protest against the establishment of martial law in the latter county by the state officials and enforced by the state constabulary.

In order to reach Mingo County the marchers would have to pass through Logan County. The people of Logan County protested against the passage of such a body of armed men, and, when it became apparent that the state authorities were powerless to stop the march, they themselves organized and prepared to oppose the marchers. That was the situation found by General Bandholtz. He had a conference with the officials of the miners' union who had started the affair and put it up to them to stop it.

In less than twenty-four hours the march was stopped and the marchers dispersed. The affair seemed to be over with.

At this juncture the state authorities added another blunder to their slate by entering indictments against certain of the union officials, and when this was noised around the whole affair again burst into flame and the union miners once more started for Mingo County.

The President issued a proclamation calling upon the men to cease operations and disperse the unlawful assembly. The time limit for compliance was set at noon September 1. To this proclamation the marchers paid no attention whatever. The battle front had extended along the border of Logan and Kanawha counties for a distance of 20 miles, and there were a considerable number of casualties on both sides. Operations continued, and it was found necessary to send two regiments of infantry (the 19th and 26th) to the affected area.

The situation was splendidly handled. The miners were disarmed and the assembly broken up. Law and order were restored without the necessity for resort to drastic measures or the declaration of martial law.

In order that the Army may have a knowledge of this situation in West Virginia in case it is again called to service there, we give below a concise history of the events leading up to it.

In the first place the West Virginia authorities had declined or at least had neglected to organize the National Guard units allotted to the state and therefore had no adequate armed forces with which to maintain law and order. This affair has served to demonstrate the necessity for a National Guard, and steps are now being taken to organize one.

Practically all the coal fields of West Virginia are unionized, except those in the southern part of the state in Logan, Mingo and McDowell counties. These latter have, for some fifteen years, steadfastly refused to unionize. Led by the coal operators and backed by the county officials, the miners themselves have fought off the efforts of agitators

and officials of the United Mine Workers, who have made repeated efforts to bring these coal operations under union domination. Agitators have been dealt with summarily and expelled from the fields whenever they were discovered.

This last affair was a determined attempt to get into the coal fields of Logan and Mingo counties by the union officials with a view to imposing unionism on them.

It is a fact that when miners in all other union fields are out on a strike—and there are strikes always—the non-union mines of southern West Virginia go right along producing "black diamonds" to tide over the period. And this is the meat of the coconut. The United Mine Workers do not want them to produce. They want to control the entire coal mining situation and to say when, where and under what conditions all coal shall be mined.

It is also a fact that the conditions under which coal is mined and the miners live in southern West Virginia are the best in the country. The miners are well satisfied with their lot. They do not want to be unionized and have been fighting it off for fifteen years. There are no strikes except where union officials and agitators get in and create disturbances.

It is alleged that the coal operators of other fields in adjoining states that operate under union domination are backing the attempts of the agitators to unionize the southern West Virginia fields. It is a fact that hundreds of the marchers were men who had been imported from out of the state for the purpose of staging a big demonstration. Many of these men had no idea of what they were there for or what it was all about.

Much credit is due General Bandholtz, his Chief of Staff, Col. Stanley Ford, and the officers of the regiments for their masterly handling of a difficult situation which might easily have resulted in much bloodshed.

The Boston Jobless Auction

Jobless men were sold at auction on Boston Common last month. The fact that some of the demonstrants were ex-service men was made much of and paraded before the public in the press of the day.

This may all be dramatic, but is it good form? Does it do the ex-service man any good? Does he reap any advantage from it? All of these questions must be answered in the negative. The service man who enters into such affairs is merely lowering his standard. He is being exploited for the benefit of those who gain a little cheap notoriety for the time being, at his expense.

Such demonstrations are not dictated by a spirit of patriotism. They are not justified by existing conditions. The material resources of this nation are but half developed. Labor—the sweat of the brow—is needed to develop them. Look about you. How many acres of land—good, productive land—has lain idle this summer all for the want of willing hands to work it and make it produce?

How many of these jobless men would be willing to go out and do manual labor on a farm where they would be insured three square meals a day, a good bed to sleep in at night, and the wages the farmer can afford to pay? How many of them would be willing to do an honest day's work every day in return for all of this?

How many of them actually did it this past summer when the farmers throughout the land were crying for help to put their idle land under production? It is unnecessary for us to answer these questions. Unfortunately we all know their answers.

The "Help Wanted" ads in the papers throughout the country are still interesting. There are literally thousands of jobs open for the man who will take a plain, honest job—"positions" are somewhat scarcer. The people who have these jobs at their disposal are not attending "slave auctions" on Boston Common.

Any honest desire to bring employers in touch with the jobless who are really "up against it" would find much more effective manifestation in the opening of an honest-to-goodness employment office run for the benefit of both the employer and the employe and with absolutely no idea of the exploitation of either.

Commonplace Things

The fairy tales of yesterday are the accomplished facts of today.

Aladdin rubbed his wonderful lamp, made a wish and "presto"—it was fulfilled forthwith. So it is today. Man wishes. Tomorrow another man invents and a marvelous contraption comes forth to fulfil the wish. And it all seems so commonplace in our everyday life.

A small bell, hidden in the corner of a room or under a desk, tinkles. You reach for the transmitter, place it to your mouth and talk equally well to a man upstairs or one who is a thousand miles away. Magic! Indeed, no! It thrills no more than the casual conversation you had with your neighbor on the street this morning.

A slight pressure of the hand on a button lights a whole city as easily as it does a room. A small electric spark explodes gasoline vapor, sets in motion the wheels of your limousine, and sends you speeding over the road at an express train rate. The touch of the finger on a key sends messages that man may decipher through thousands of miles of ether. A small needle traveling around the grooves of a disc will reproduce the human voice or any kind of sound that has been recorded thereon.

Yet who takes but passing note of all these marvelous things. Man's own wizardry has become but the common place of everyday life.

Europe Will Pay

There has been a lot of talk about the ability of the countries of Europe to pay the war debts owed to the United States. Some of our people have even gone so far as to suggest that we forgive them what they owe us, write off the entire transaction, get it off the check book, call it square, and stop worrying.

If we keep on telling these people that they are national bankrupts, they will finally get to believe it themselves.

Measured by commercial standards they are not bankrupts. Their liabilities do not exceed their assets, as the following figures will show:

Country	*National debt*	*National wealth*
Great Britain	$46,000,000,000	$230,000,000,000
France	51,000,000,000	100,000,000,000
Italy	20,000,000,000	40,000,000,000
Russia	25,000,000,000	60,000,000,000

It is inconceivable that national debt would bankrupt a nation unless it

should be accompanied by a bankruptcy of morals or a depletion of man power beyond the point of recuperation.

The history of modern civilization points conclusively to the fact that national debt, whether owed internally or externally, has acted as a stimulus in the creation of new wealth and, in spite of the temporary oppressive burdens, has resulted in an increase of national prosperity and a betterment of the standards of living.

When Bismarck imposed his billion-dollar indemnity on France at the conclusion of the Franco-Prussian War he thought he was saddling that people with a burden that would crush them out of existence and that Prussian troops would garrison France for a generation to come. What happened? Within the incredible period of a few years the French people paid off the indemnity, much to the surprise of the world and much to the disgust and chagrin of Bismarck.

The national debt of Germany is some $62,000,000,000. Her national wealth is estimated today at $20,000,000,000. Is there anyone today who believes that Germany will not pay out? She may be temporarily insolvent, but she will come back again. Word comes that the great Krupp works at Essen, where 140,000 people are employed, are running at 100 per cent capacity and likewise at 100 per cent efficiency, not making engines of war as formerly but manufacturing railway engines and cars and selling them for Russian and Argentine gold. We hear much the same story all over Germany.

Today the plight of Russia places that country almost beyond the pale. But knowing men are confident that the Russian people will eventually find themselves, cast off the oppressive Bolsheviki yoke, and come back again. There will come a leader or group of leaders who will be able to stem the time of bolshevism and place Russia on her feet. With her national resources in operation again it will not take long to repair the damage, and Russia will ultimately pay 100 cents on the dollar.

So it is with all of those nations who owe the United States. They will ultimately pay 100 cents on the dollar. Let's stop this talk of wiping out the debt, get exchange on a stable basis and get back to work and commerce. That is the salvation of all of us. That the United States will eventually get all that's coming is our estimate of the situation.

The Clothing Allowance

The Army welcomes the return to the old-time system of clothing allowance for the soldier man. It is the one move, more than anything else, that will help to get the Army "spruced up" again. The proposition now is for the Quartermaster's Department to supply a good quality of olive drab woolen cloth to post tailors at a reasonable price. The tailors and the soldiers will do the rest.

Investors' Column

THE ever-strengthening signs of improvement in business and industry are gradually bringing back the fake promoter, with his alluring literature, his get rich quick schemes, all so attractive that it surprises one that a stranger should be so generous in letting one in on so many good things for so little money.

If one desires to invest his money safely, he will take no chances and will relegate such literature to the waste basket and consult his banker on his investment.

Investments should not be made for the sake of income alone. One should first consider security; next, marketability; and last, income. Security of investment, if it is all it should be, guarantees the income, no matter how large or small it may be during the life of the investment.

While many who are investing their funds feel that such investments will not be disturbed by them as long as the security remains unimpaired and the income continues to be paid, it is always wise to be certain that the investment one is about to make is also liquid or marketable—that is, that at all times the investment is such that it can be readily sold in the open market. The price of marketable securities is not governed in such cases by one individual or set of individuals, but by the general public who create the demand, thereby establishing the market price.

Strange as it may seem, income is the last thing that should be considered, but in reality is the first thing that attracts the investor. The income at the time of purchase may be good, but if the security behind it is not all that it should be the income may cease, which, of course, makes the investment worthless.

There are many bonds that fill all the requirements set down, yet we receive many inquiries about practically worthless stocks, bonds and schemes in which many are about to invest or in which they have already sunk their money. Blue-sky laws have been passed in many states for the protection of just such persons, who are the victims of impatience or over-anxiousness to have their money earn more than it should with the proper degree of safety.

The educational campaign instituted by magazines such as ours and banking institutions are fast putting the fly-by-night promoters out of business, as well as extending a protecting wing to the heretofore unprotected laymen.

While interest rates are gradually receding towards normal, there is still considerable demand for money to be used in new financing and for refunding purposes, enabling the shrewd investor to still do some bargain shopping. Liberty Bonds, with their recent rise, have reflected the abundant supply of money and the belief in lower interest rates. It is believed that as the yields on all Liberty issues are less than the yield on Treasury short-term notes it indicates that the investers prefer long-term maturities, which leads one to believe that the more distant maturities have speculative possibilities. It is the belief among many bankers that Liberties will be selling at par within the next twelve months, and at present prices are an exceptionally good investment.

The Monthly Review, published by the Federal Reserve Bank in New York, as of October 1, 1921, contains information under the heading "Credit Conditions," which is particularly interesting and quoted below:

The reduction of discount rates of the New York Reserve Bank on September 22 was a reflection of existing credit conditions in the Federal Reserve district. More particularly, it was a reflection of easier conditions in the money market. Evidences of the tendency toward lower rates for money, which have been gradually extending since last winter, included the sale of September 15 of $698,000,000 of Treasury certificates and notes at rates lower, for corresponding maturities, than at any time since March, 1920; the immediate quotation of these certificates and notes in the open market at a premium; the decline of 5 to 4¾ per cent in the rate at which dealers offer bankers' acceptances; and a rise in the market prices of Liberty bonds and Victory notes.

The lower rates of return on investments of complete security and the readiest sale are the best indications at this time of market rates for money. They imply an increased volume of funds seeking the safest investment.

This statement again drives home the fact to our readers that if ever there was a time to buy securities it is now.

Chicago, Rock Island and Pacific first and refunding mortgage 4's, due April 1, 1934, selling around 71, yield about 7½ per cent to maturity. Although the issue is not so well secured as the general mortgage 4's, due January 1, 1988, which are a very high-grade bond, they are an attractive investment at this time in view of the present financial condition of the railroads. They are secured by a direct or collateral mortgage on about 5,828 miles, 1,282 miles of leaseholds, securities, other properties, and are subject to $74,936,000 prior liens. Total funded debt of the company is $229,975,797, including $15,267,625 equipment trust issued. August earnings show net operating revenue of $3,700,452, the largest in its history, and at a rate that caused executives of the company to predict that the year may show as much as 5 per cent earned on the common stock. This should reflect a substantial advance in the price of the outstanding bonds and stock.

E. I. du Pont de Nemours & Co. 10 year 7½ per cent bonds, due May 1, 1931, selling at 99½ to yield over 7½, are a direct obligation to a very strong corporation. Exclusive of profits on war business, their net annual receipts have averaged over $7,500,000. with annual interest charges of $2,645,000. They are outstanding in the amount of $35,000,000, and were issued in part to supply funds for permanent financing of the cost of General Motors, common stock (7,000,000 shares) and in part for other corporate purposes of E. I. du Pont de Nemours & Company.

The annual report of the du Pont Company for the year ending December 1, 1920, showed net working capital of $72,572,421. Cash accounts receivable and finished products, after $10,342,413 was written off and charged against reserves, amounted to $86,634,667. Profit and loss surplus was $69,659,748. After allowing for fixed charges, depreciation, taxes and dividends on debenture stock, the balance was equivalent to 18.7 per cent common stock. These bonds are redeemable on 60 days' notice at 110 per cent and

interest prior to May 1, 1922, the redemption price thereafter decreasing 1 per cent each succeeding year ending April 20. This is doubtless a very good bond, selling at a very reasonable profit and should enjoy an advance at no far-distant date.

Southern Railway Development and General Mortgage 4's, Series A, due April 1, 1956, selling at 59¼, yield about 7¼ per cent. The bonds are a direct obligation and secured by the direct lien on 3,880¼ miles of road and collateral lines on other mortgage, securities, etc. They are subject to $133,818,200 on a total funded debt of $234,212,500, as of December 1, 1920.

Income statements of Southern Railway Co. for the past ten years show bond interest on an average of about 1½ times, while the statement for 1920 shows net corporate income, after charges and taxes, of $1,716,148 equivalent to $2.86 a share earned on $60,000,000 preferred stock. August, 1921, earnings show net operating income of $1,682,276 and eight months of 1921 net operating income of $4,989,231. These bonds are a second-grade railroad bond but offer an excellent opportunity for profit to the investor in the next few years and at the same time assure him of good security of principal.

Fort Myer: *What is your opinion of the Japanese 4½ bonds due July* 10, 1925?

These bonds are now selling around 85 to yield about 9 per cent. Japanese Government 4½ per cent sterling bonds are given a higher yield than most of European issues. They are really a short-term loan, as both the first and second series mature in 1925.

Some investors are under the impression that because the Japanese bonds are payable in sterling their prices may be affected by the fluctuation in sterling exchange. This is not true, because they are payable in the United States in gold at the rate of $4.87 to the pound sterling. Japanese 4's due February 15, 1925, were created under the authority of the law promulgated January 1, 1905, and of an Imperial Ordinance of the Emperor promulgated March 26, 1905, and are secured by a first charge on the net revenues derived from the Japanese Government tobacco monopoly.

The Japanese 4½'s sterling bonds due July 10, 1925, were created under authority of Imperial Ordinances of the Emperor promulgated July 8, 1905, secured by a second charge upon the net revenue, derived from the Japanese Government monopoly.

Subject to that of the Imperial Japanese Government's 4½ per cent sterling loan, due February 15, 1905, the bonds enjoy an active market on the New York and London stock exchanges, and appear to be a reasonable buy at present prices.

Fort Riley: *Do you consider Missouri-Pacific general 4's of* 1975 *a good buy around* 56?

The high on these bonds during the year of 1920 was 60. Since the high of last year the corporation's position with respect to cash and loans has been greatly strengthened. While this improvement is mainly due to the settlement with the Government brought about by canceling two notes, aggregating nearly $9,000,000, the company still retains cash and securities of about $20,000,000 and its investment holdings have been much strengthened through switching operations. Large holdings of the Denver and Rio Grande

stocks have been sold and replaced with first and refunding 5's. Part of the holdings of the Texas-Pacific stock was also sold at a substantial profit.

It is true the company will not probably earn a margin over its interest this year, but this road has been more liberal in the matter of upkeep than many others, and as adequate cover for interest and fair maintenance of property are two factors of chief importance for railroad bondholders, the Missouri Pacific general 4's compare favorably in these two respects to other second-grade railroad bonds.

Fort Sam Houston: *Do you think Hudson and Manhattan first lien refunding mortgage 5's of 1957 a safe investment?*

These bonds are selling at about 67½ to yield about 7.69 per cent, and are a direct obligation of the company secured by a mortgage on its entire property, subject only to fire liens amounting to $5,900,000. There are $37,521,-233 outstanding, followed by $33,102,-000 adjustment income 5's of 1957. This corporation is under the jurisdiction of the Interstate Commerce Commission and classed as a railroad and not as a public utility. Its earning powers have improved considerably during the past two years, being in part due to an increase in fares, increase in rentals in its large office buildings in downtown New York and ever-increasing passenger traffic. The company is now in the strongest financial position in its history, and these bonds are selling at a very attractive price.

Roll Your Own—in Stamps

Confederate money depreciated to wall paper after the Civil War. But who ever heard of real, honest-to-goodness postage stamps descending to smokes? However, that's what happened among General Judenitch's troops during the Great War, with the result that stamp collectors are besieging the Paris office of the American Red Cross with requests for specimens of the rare "Judenitch" issue.

The distinctive feature of these stamps is that they are printed on very thin paper. Though intended for franking letters, the stamps had to be rationed out by the German general as cigarette paper when his soldiers ran short of that commodity. Consequently nearly the whole issue went up in smoke, and today samples are virtually unobtainable.

Reserve Officers' Department

Field Engineering

(*Continued*)

CHAPTER V

TRENCHES

In the preceding chapters we have dealt with the tactics of defensive combat and the principles and methods which govern the organization of the ground for defense. A general knowledge of these fundamental principles and methods is essential to the correct use of field fortification. The remaining lessons of the course are devoted to details of construction of works of defense and their accessories, in so far as they should be known to junior officers of infantry.

Infantry officers will be called upon to supervise the construction of all the works hereinafter described. Some of them are the special function of the engineers. But the infantry should know when such works are needed and how they should be located. They should be familiar with their proper tactical employment and should know enough about their construction and the difficulties involved therein to determine when it is practicable to employ any given structure, and when it has been properly or improperly constructed. Engineers are not always available, and when they are lacking the entire task of organization must be performed by the infantry alone. In such a case very elaborate works would of course be omitted.

So far as concerns the amount of labor required of the infantry, the trenches are the principal item in the organization of a position.

CLASSSIFICATION OF TRENCHES

With reference to their *direction*, trenches are classified as *parallels* (parallel to the front), *approaches* (perpendicular to the front, and *switch* trenches (oblique to the front.

With reference to their *profiles* or *cross-sections*, they are classified as *fire* trenches and *communication* trenches. This classification is not rigid, since *all* trenches are used for communication, and *any* may be used for the delivery of fire. In general the parallels are primarily fire trenches, and the approaches are primarily communication trenches.

Trench Definitions (*Nomenclature*).—The *trace* of a trench is its line on the ground, generally the single line where the interior front slope intersects the ground surface, is taken to represent the trace, and used in laying it out on the terrain.

The *profiles* or *cross-sections* of standard trenches are shown in Plates 17 and 18. In these figures the principal elements of the trench are indicated.

The *command* is the height of the parapet above the natural surface—usually 1 foot 6 inches.

The *depth* below the natural surface is 6 feet for the standard Type B trench.

The *vertical cover* or *relief* is the sum of these two, or 7 feet 6 inches, decreased however by the height of the trench board above the bottom (1 foot).

A *berm* is a horizontal shelf inserted to prevent caving banks falling into the bottom of the trench and choking it, which would interfere with the circulation of troops in the trench and also prevent drainage.

The *fire-step* is a berm on which the riflemen stand while firing. For men of average height it should be 4 feet 6 inches below the firing crest of the parapet.

The *parados* is a spoil bank for excavated earth back of the trench. It serves also to protect the occupants from the back blast of shells, and may form a background to render less visible the heads of men looking over the parapet in firing.

The foregoing and other details of trench

nomenclature are shown in Plate 17, Type B, fire trench. The figures in parenthesis indicate heights or depths above or below the original surface of the ground, in feet and inches.

Standardized Forms.—The trace and profile of trenches are subject to infinite variation, according to the situation, the nature of the soil, etc., or even the whims of those who construct them. It is well, however, to limit the trace and profile to a minimum number of standardized forms, sufficient to meet all the usual needs. The advantages of standardization are:

1. It prevents nonuniform and especially bad practice.
2. It facilitates training.
3. It produces quicker and better results in operations on a large scale by unskilled workmen.
4. It prevents waste of labor and material.
5. It permits the fabrication of standardized materials back of the line, thus saving time and material at the front.
6. It makes all such standardized materials

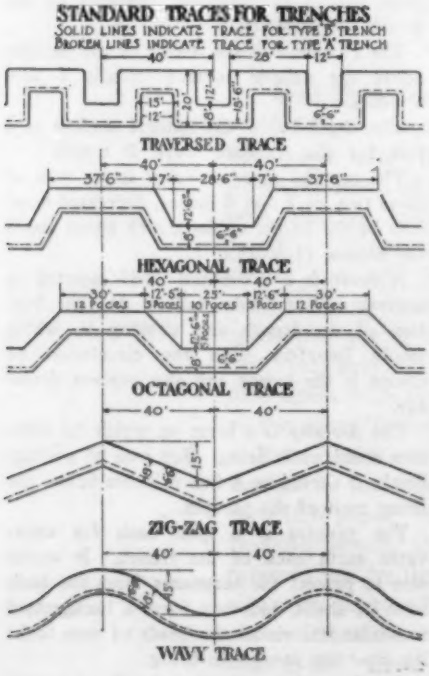


PLATE 17.

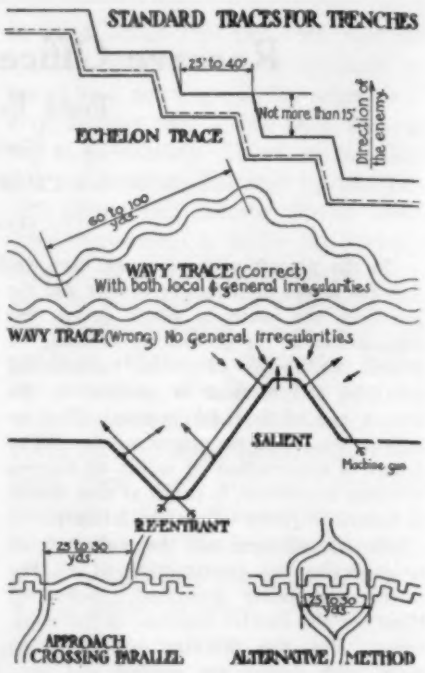


PLATE 18.

available for all work at all localities and obviates the need for specials.

Standard Traces.—If a trench were constructed in a perfectly straight line, it would be subject to enfilade by any hostile weapons such as rifles, machine guns or artillery, which might occupy commanding ground in prolongation of the line of the trench, or by an enemy who might establish himself behind a barricade in the trench. A shell bursting in the trench would scatter its fragments for a considerable distance along the trench in both directions. Also, such a trench would not readily permit of cross or flanking fire by the defender along his own front.

To avoid these disadvantages trenches should always be laid out with an irregular trace.

The standardized traces for fire trenches which have been adopted by the American Army are shown in Plates 17 and 18. They meet all the usual requirements and are easy to lay out and construct. They may be modified as necessary to adapt them to the

terrain, but as these standards are already well adapted it will seldom be necessary to make any radical changes. In case of work conducted in the presence of the enemy, connecting individual or squad trenches, shell holes, etc., the standard traces can be approximated only. The result should be wavy lines, conforming in general to the requirements herein. The double lines in the figure shown are those in which the front and rear interior slopes of the trench intersect the natural surface of the ground.

The traversed trace affords the best protection against shells bursting in the trench, as the dispersion of the splinters is most limited. The wavy or zigzag traces, on the other hand, are easier to construct (requiring less excavation), afford a better development of frontal and oblique fire by riflemen in the trenches, and are more convenient for the passage of men along the trenches.

The octagonal trace combines in large measure the advantages of both the traversed and wavy traces and will be the most suitable trace for fire trenches in the majority of situations.

It will be noted that the intervals between traverses, bends or waves are in every case 40 feet. Also, for convenience in laying out work, the essential dimensions of all these traces are in multiples of 2 feet 6 inches, which is the length of a pace.

The echelon trace is used for sharp changes of direction, on the faces of salients or reentrants in the general line; or on an exposed flank, as in the case of a position of limited extent.

Traces of Communication Trenches.—For communication trenches, as they are not habitually used as fire positions nor so constantly occupied, less provision for the development of fire or for protection against enfilade and the effects of shell bursts is required. The traversed trace is not used because of its sharp turns and the difficulty of passage along it. The zigzag or wavy traces are preferred for communication trenches, with greater intervals between turns, it being only necessary to avoid the possibility of enfilade of very long stretches of trench. For the defense of approach trenches, in case the enemy obtains a footing in them, a straight stretch of about 50 yards should be placed in front of the junction with each parallel, which stretch may be enfiladed by the defenders by automatic rifle fire through a traverse, and (exceptionally) by bombing posts suitably placed.

Crossing of Parallels and Approaches.—The crossing of an approach and parallel should not be continuous, as this would allow entrance to or exist from the parallel from both directions to be blocked by a single shell-burst at the junction. The entrance and departure of the approach should be separated by some 30 yards, and there should be a traverse or a change of direction between them. Two alternative methods of crossings are shown in Plate 18. They should be properly signposted so that troops may not lose their way. An approach should enter a traversed parallel (in rear of a traverse) and leave (to the front) from the flank of a traverse (Plate 18).

General Irregularities of Trace.—In addition to the local irregularities of trace shown in Plate 17, enfilade by hostile fire should be further guarded against and defensive fire along the front of the parallel facilitated by more general changes of direction at intervals of 100 yards or so (Plate 18).

Salients and Reentrants.—The adaptation of the defenses to the terrain will result in many changes of direction of the trenches, producing alternate salients and reentrants. The weakness of a salient is that it permits converging effort, both fire and assault, by the attacker, while the defense is diverging (Plate 18). In a reentrant the situation is reversed. A salient is certain to be a target for hostile artillery fire, raids, etc., especially a small salient; while a large salient is apt to be the objective of an attack in force. It is accordingly an unfavorable locality for the vital elements of the defense, particularly machine guns. Small, sharp salients projecting into the hostile lines *may* accordingly be an element of weakness in a position, although if they occupy commanding ground, affording good view and fire on the hostile position, they may afford advantages. Ordinarily they are to be avoided in laying out a position. Their fronts and flanks should be well protected by a properly organized artillery barrage (defensive), and by the fire of machine guns and auto rifles

of adjacent combat groups to the flank and rear.

STANDARD PROFILES

The profile or cross-section of a trench varies according to its purpose (fire or communication), the nature of the terrain and soil, the weapons against which it is to provide protection, time available for its construction, and certain other conditions. The variety of trench profiles has been almost infinite, and some of them have served their purpose and met conditions very poorly.

Every infantry officer should be familiar with the dimensions of trenches and the methods of constructing them. It is therefore very desirable that the number of different type profiles be reduced to the least that will meet all usual conditions, that these be well standardized, and that all be thoroughly familiar with them. The standard profiles herein described are based on the best practice of the American and Allied armies in the World War, have been adopted, and are shown in Plate 19.

These standard profiles are on a definite system. They furnish the best practicable cover and communication when opposed to an enemy armed with every known weapon. They are as simple as it is possible to make them. Two principal types are provided for both fire and communication trenches: Type A for use in stable soils (hard ground) not ordinarily requiring revetment, and Type B for use in less stable soils (soft ground) requiring revetment of the lower half and sometimes of the entire trench. A third, Type C, is provided for important communication trenches, especially those used for evacuating wounded. It permits easy passage of litters or of two lines of troops. It differs from Type B only in the width of the passageway, which has a double line of trench boards.

The parapets of fire trenches should generally be revetted when practicable, preferably with sandbags. The fire steps should also be revetted if the trenches are to be occupied for any considerable period; otherwise they will soon break down, even in firm soil. The parapets of communication trenches do not require revetment except in those portions prepared for fire. The Type A communication trench is prepared for fire by digging a fire step and revetting the parapet. Type B communication trench is prepared for fire by slightly altering and revetting the parapet. The general similarity of the fire and the communication trenches may be noted in the figures.

If these trenches are used in very wet and poorly drained ground, or in stony ground where excavation is very difficult, the parapets may be raised and the bottoms of the trenches placed at a higher level. The profiles may otherwise remain the same.

The Type A trenches may be developed from any existing type, and the Type B trenches may be developed from the Type A with no lost labor.

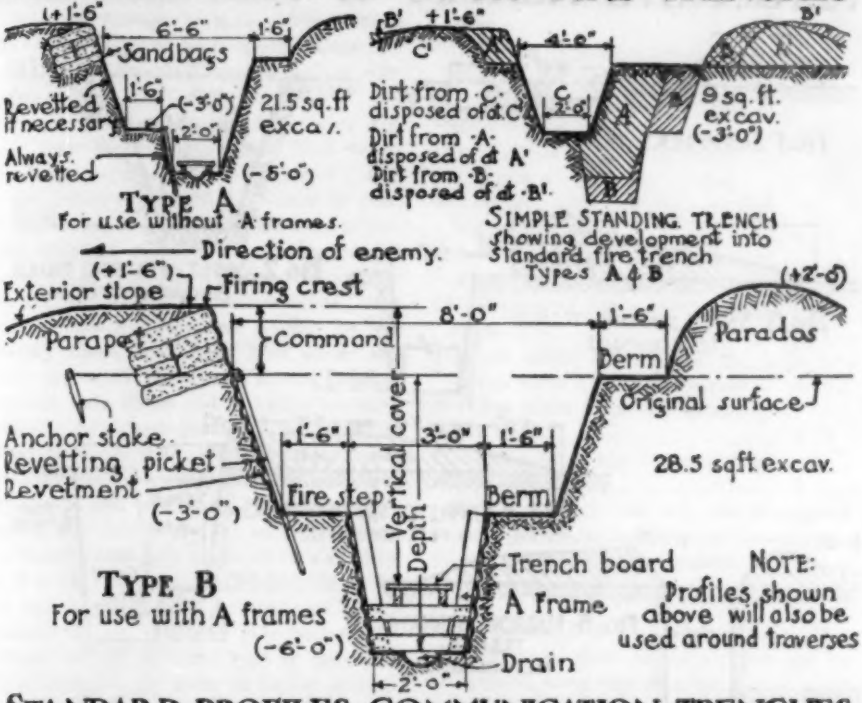
The fire trenches are of what is known as the *complete* type, that is, they provide for the men firing and also for the passage of others in rear without disturbing the firers.

In constructing the standard types at the front they should be first dug to full depth to provide protection, and subsequently widened.

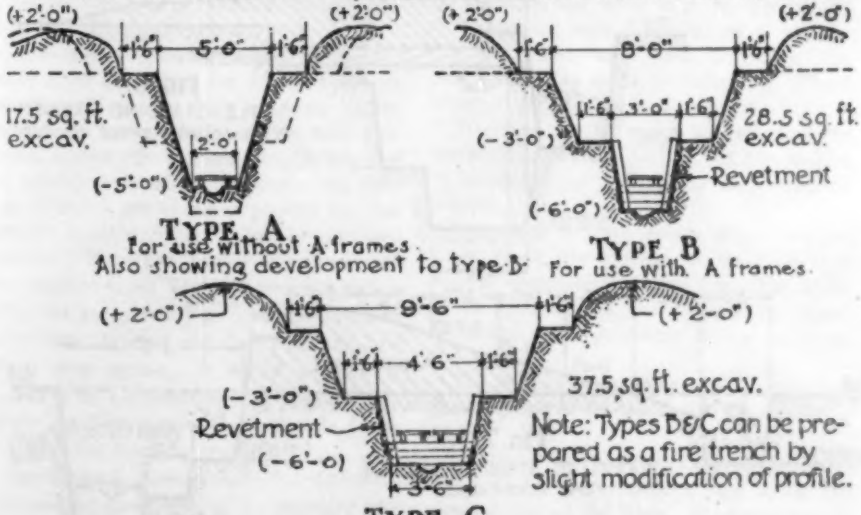
Height of Parapet, Fire Step and Bottom of Trench.—The height of parapet adopted (1 foot 6 inches) is that most suitable for the majority of situations, being a compromise between the requirements of command for the effective delivery of fire, and concealment. A very high parapet is unduly conspicuous and less suitable for effective fire than one of moderate height. On the other hand, a trench with no parapet may not afford sufficient command for effective fire, and both edges of the trench may be visible to the enemy in the foreground. Also the excavated material will be difficult to dispose of. A parapet of moderate height affords suitable command, and, if sodded and camouflaged, conceals the edges of the trench from the attacker's troops. However, if trenches are installed in very wet and poorly drained ground, or in stony ground where excavation is very difficult, the parapets may be raised and the bottoms of the trenches placed at a higher level. The profiles otherwise remain the same.

The height from the fire-step to the parapet (4 feet 6 inches) is suitable for the delivery of fire by a man of average stature. The depth of the bottom is such as to

STANDARD PROFILES FOR FIRE TRENCHES



STANDARD PROFILES, COMMUNICATION TRENCHES



ALTERNATIVE PROFILES OF FIRE TRENCHES

FIG.1 SKIRMISHER'S TRENCH

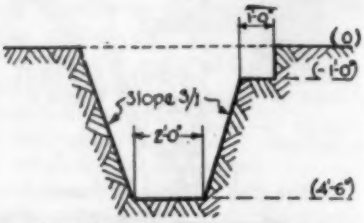


FIG.2 SIMPLE STANDING TRENCH
Parapet suppressed.

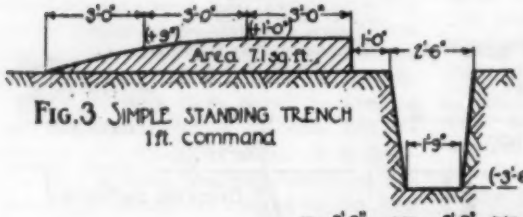


FIG.3 SIMPLE STANDING TRENCH
1ft. command

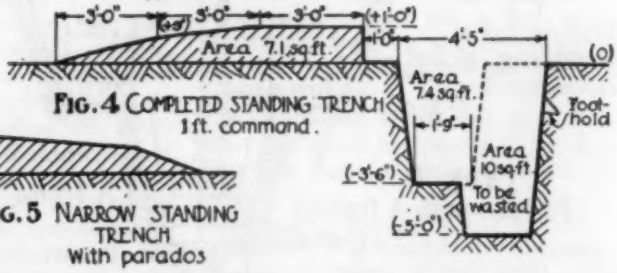


FIG.4 COMPLETED STANDING TRENCH
1ft. command.

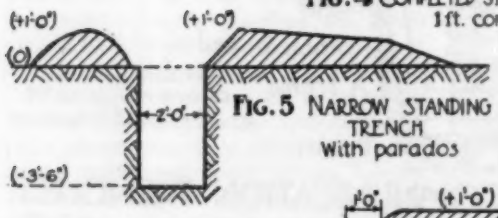


FIG.5 NARROW STANDING
TRENCH
With parados

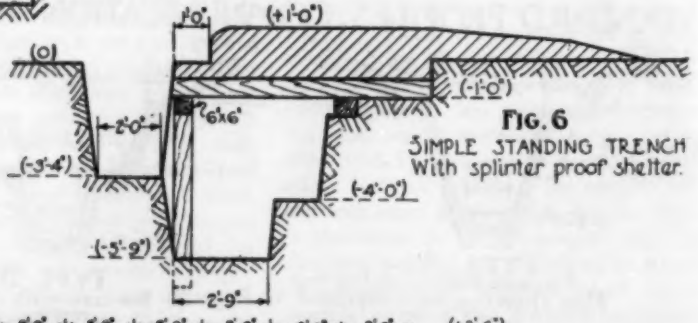


FIG.6
SIMPLE STANDING TRENCH
With splinter proof shelter.

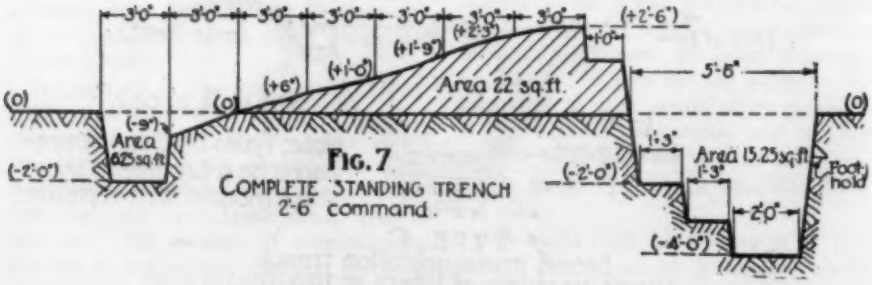


FIG.7
COMPLETE STANDING TRENCH
2'-6" command.

afford head cover for men passing along the trench while walking erect.

Wide and Narrow Trenches.—Very narrow fire trenches with head cover afford the best protection to their occupants from rifle, machine gun, and shell or shrapnel fire. Formerly fire trenches were made very narrow, sometimes furnished with head cover, and the passage of men was provided for by a circulation or "doubling" trench in rear. It was found, however, that this did not provide sufficient mobility for troops moving to the firing line. Under a modern artillery bombardment the narrow trenches were quickly broken down and blocked by exploding shells, and their head cover was easily destroyed. Also, these narrow trenches required steep slopes and excessive revetting, which is the slowest part of trench construction. Accordingly the wide, complete trench without head cover, permitting both fire and circulation and not easily blocked by shell bursts, was finally adopted as best. Where the enemy is not fully equipped with artillery, or in a hasty organization or delaying action, the narrow trench may be employed to advantage in firm soils. It may be later developed to the standard type if necessary. Head cover, in the form of niches or loopholes or handbags, wood or steel, snipers' hoods, etc., may be provided at certain special places in the trenches.

Alternative Profiles.—A number of alternative types of profiles for fire trenches are shown in Plate 20. Fig. 1, known as the skirmisher's prone trench, affords good protection against rifle and machine-gun fire, but not against shrapnel or high explosives shell. Figs. 3 and 5 are excellent profiles for fox holes or short stretches of hastily organized trenches. They are readily converted into the standard types. The splinterproof shelter under the parapet in Fig. 6 affords excellent cover from shrapnel and shell fragments and allows easy egress. It would be quickly destroyed by a concentrated fire of high explosive, and its débris would greatly interfere with fire from the trench.

Fundamental Dimensions.—The following fundamental dimensions of the standard profiles should be noted by every officer (it is not necessary that they be memorized):

	Ft.	*Ins.*
(*a*) Height of firing crest above fire step	4	6
(*b*) Height of parapet above natural surface (in dry ground)	1	6
(*c*) Height of parados above natural surface	2	0
(*d*) Depth of Type A trenches	5	0
(*e*) Depth of Type B trenches	6	0
(*f*) Bottom width of Type A and B trenches	2	0
(*g*) Width of berms (including fire-step)	1	6
(*h*) Unrevetted slopes in excavation, about	3 on 1	
(*i*) Top width Type A fire trench	6	6
(*j*) Top width Type B fire trench	8	0
(*k*) Top width Type A communication trench	5	0
(*l*) Top width Type B communication trench	8	0

NOTE: In very stiff soil side slopes may be made steeper, using the same bottom width (2 feet), thus saving excavation.

LAYING OUT THE TRACE

The locations of the trenches having been decided upon, their traces are laid out on the ground, using tape or twine, pinned down with large nails (40d or 60d). If no tape is available, the trace may be marked by a furrow cut with the point of a pick or mattock. The tape used in tracing the trench should be saved for future use. There is never enough of it available.

Trenches may be traced by extending the working party along the line, but this method is unsatisfactory and should be avoided if possible.

It is usual to trace only a single line, the front lip of fire trenches or the right-hand edge of communication trenches. The width to be excavated is then marked by means of gauge sticks graduated to the width of the trench.

The tracing of trenches is of such importance that it should always be supervised by an officer.

Tracing the Traversed Trench.—1st Method: An officer lays a tape along the general line of the trace. A second tape is prepared with loops at each turn (11-5-5-5-11-5-5-5-paces, etc.). One noncommissioned

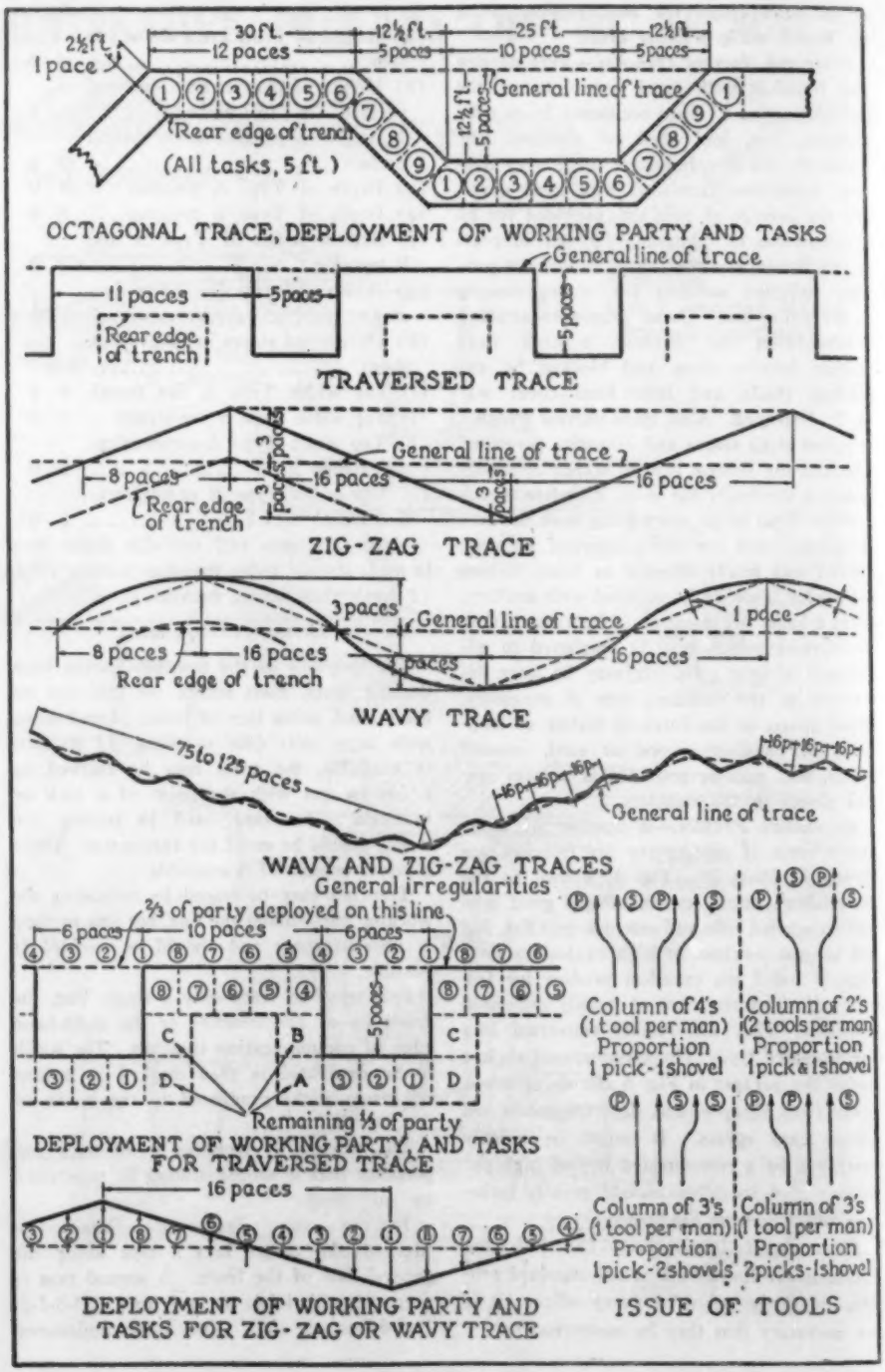

2½ ft. 1 pace
30 ft. 12 paces
12½ ft. 5 paces
25 ft. 10 paces
12½ ft. 5 paces
General line of trace
12½ ft. 5 paces
Rear edge of trench
(All tasks, 5 ft.)
OCTAGONAL TRACE, DEPLOYMENT OF WORKING PARTY AND TASKS
General line of trace
11 paces
5 paces
Rear edge of trench
5 paces
TRAVERSED TRACE
3 paces
General line of trace
8 paces
16 paces
16 paces
Rear edge of trench
ZIG-ZAG TRACE
3 paces
General line of trace
1 pace
8 paces
16 paces
16 paces
Rear edge of trench
WAVY TRACE
75 to 125 paces
16p 16p 16p
General line of trace
WAVY AND ZIG-ZAG TRACES
General irregularities
⅔ of party deployed on this line
6 paces
10 paces
6 paces
5 paces
C
B
C
D
A
D
Remaining ⅓ of party
DEPLOYMENT OF WORKING PARTY AND TASKS FOR TRAVERSED TRACE
16 paces
DEPLOYMENT OF WORKING PARTY AND TASKS FOR ZIG-ZAG OR WAVY TRACE
Column of 4's (1 tool per man) Proportion 1 pick-1 shovel
Column of 2's (2 tools per man) Proportion 1 pick & 1 shovel
Column of 3's (1 tool per man) Proportion 1 pick-2 shovels
Column of 3's (1 tool per man) Proportion 2 picks-1 shovel
ISSUE OF TOOLS

PLATE 21

officer and one man lay the looped tape along the general line, pinning down the corners of the fire bays and taking up the tape laid by the officer. Two other men follow, pinning down the back corners of the traverses.

2d Method: An officer lays a tape on the general line. An N. C. O. follows, pacing off the front corners of fire bays and traverses and placing nails at each. Two men follow, one pacing out the traverses, the other stringing the tape.

Tracing the Zigzag Trench.—An officer lays a tape along the general line, putting in the general irregularities. An N. C. O. follows, pacing the alternate distances of eight and sixteen paces, marking the points with his heel or with nails and taking up the tape laid by the officer. One man follows, pacing the offsets of three paces to the front and rear of the general line and setting nails to mark these points. Another follows, stringing a tape on the nails.

Tracing the Wavy Trench.—This is traced exactly as the zigzag except that an extra man follows who converts the straight portions into curves.

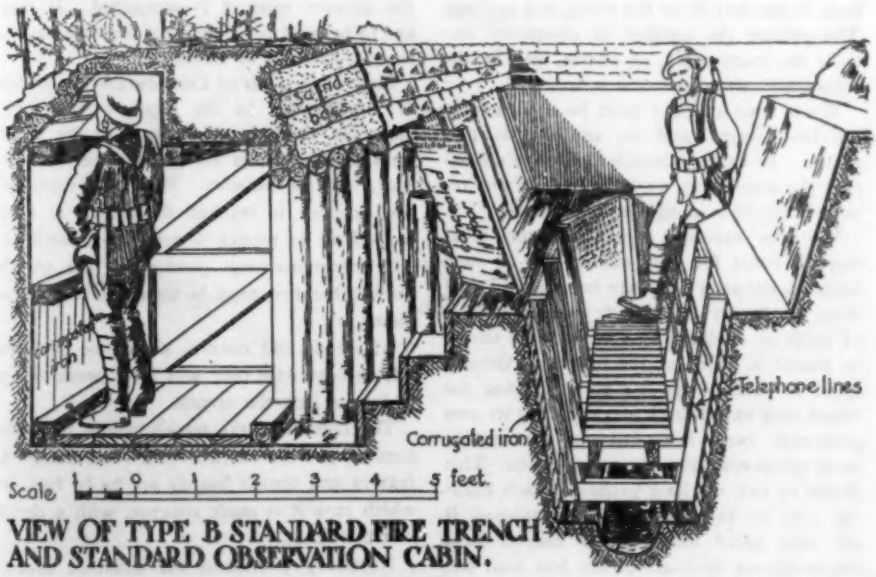
Tracing the Octagonal Trench.—An officer lays a tape along the general line. An N. C. O. follows, pacing off the distances along the general line, marking the points and taking up the tape laid by the officer. A man follows, pacing the offsets to the rear and placing nails at each vortex or change of direction. Another follows, stringing a tape on the nails.

INTRENCHING IN THE PRESENCE OF THE ENEMY

The conduct of trench work will vary considerably according to conditions, especially the proximity of the enemy.

If a position be organized not in the presence of the enemy, the trench is carefully traced out, the workers are distributed along it, and the work may proceed in broad daylight. The procedure is described in the following lesson.

Positions must, however, frequently be organized in the near presence of the enemy or under fire. The organization will often be spontaneous, individual men digging fox holes for their own protection, or groups digging short lengths of trench. In such a case the men must be left largely to their



VIEW OF TYPE B STANDARD FIRE TRENCH AND STANDARD OBSERVATION CABIN.

PLATE 22.

own resources. They should be taught that the first aim is to provide cover for themselves as rapidly as possible.

It is the duty of all officers to see that this spontaneous work is executed in a position favorable for the location of a line of resistance and that a proper alignment of the front is preserved. This cannot be left to the judgment of the individual soldier.

The individual or group trenches may, if the occupation of the position is continued, be connected up to form a continuous trench by digging endways from each section. The continuous trench may later be completed to one of the standard profiles. This procedure should, of course, be supervised by an officer.

Intrenching by Night, Working from the Ends.—Trench work in the presence of the enemy may also be done under cover of darkness if the men are properly trained. The trench is traced out and the workers assigned as soon as it is dark enough to afford concealment. If possible, the work is completed during the night. If not, the entire trench should be dug to a depth of about one foot, and a number of sections should be completed. The work may then be continued during daylight by working endways (in both directions) from the completed sections. The greater the number of completed sections the more rapid, of course, will be the subsequent progress.

Work done at night must be conducted in absolute silence, and no smoking is permitted. In case of hostile fire or illumination the men cease work, lie down, and remain motionless until the fire ceases.

Working endways is a slow process, as there is room for only one worker at each heading, although two may be employed. If there is danger of enfilade fire, a parapet of earth or sandbags or a steel shield should be placed in front of the heading. Greater speed is obtained by one party digging the trench only to the depth necessary for its own protection from fire, followed by another party which completes the cross-section. This allows of two working parties at each heading. As so few men can be employed it will also speed the work to relieve them frequently—at intervals of not less than one nor more than two hours. For work in headings it is also usually advisable to employ the scheme of "double gangs," which means that two men are assigned to each tool, relieving each other at short intervals, ten to twenty minutes, whereby a high speed may be maintained.

Templates, Gauges or Measuring Sticks.—In tracing the trench only the front edge is taped out on the ground. The rear edge is located by measuring back the prescribed distance, for which purpose a number of sticks or templates are provided with this dimension marked upon them. These same templates may be used for determining other essential dimensions such as depth of fire-step, width of berms, bottom, etc. It is the duty of officers and noncommissioned officers to see that the proper dimensions are established. After a little experience the men will also become familiar with the essential dimensions.

Removal of Sod.—If there be sod, this should be removed from the area of the trench proper, or, better, from the entire area which will be covered by the trench, parapet and parados. The sod may be removed by rectangular sections or by cutting it in strips and rolling the strips to the front. The strips may then be rolled back to cover the parapet when it is completed. If they are to be used for revetment the sods should have a size of 9 by 18 inches.

General Methods of Procedure.—The trench is dug rapidly to the depth of the fire-step, the earth being thrown to the front until the parapet is formed, and then to the rear, into the parados. When the depth of the fire-step is reached the trench is then shaped up to proper slopes and dimensions. The communicating portion of the trench (below the fire-step) is then similarly completed.

All bends and corners should be rounded off, as otherwise they will later break down and cave into the trench.

The bottom of the trench should be made convex, like the surface of a road, unless A frames and trench boards are to be had, in which case it is made concave, with a drain at the bottom.

Necessary provisions for drainage should be made as the work progresses. These are discussed in a subsequent lesson.

All parallels are constructed alike, as all may be used for the same purposes.

Communication trenches (Types A and B) are provided with passing places at intervals. As communication trenches may be used for fire in the battle within the position, portions should be prepared for fire (provided with a fire-step). It is never, of course, necessary to thus construct the entire trench, but short sections should be prepared at intervals, for fire in one direction or another.

Penetration of Rifle Bullet in Various Materials.—The following table, giving the penetration of the modern rifle bullet in various materials, will serve as a guide for thickness of parapet and other protection against rifle fire:

	Range and penetration, inches	
Material	200 *Yds.*	600 *Yds.*
Steel plate	0.3	0.1
Broken stone or gravel	4.8	3.3
Stone masonry	2.3	1.2
Concrete	3.0	2.0
Dry sand	9.0	7.0
Wet sand	15.0	12.0
Loamy earth	20.0	16.0
Greasy clay	60.0	32.0
Oak	27.0	13.0
Pine	26.0	13.0

NOTES: A knowledge of the nomenclature of trenches and of the dimensions of the standard profiles is of the utmost importance to every infantry officer. It is not necessary that these standard dimensions be memorized, but every student should know that the dimensions have been standardized and where to find them in case of need. The instructor should carefully explain the reasons for standard dimensions and the considerations which determine them.

The students should then be given a demonstration of the methods of tracing trenches as set forth in this lesson, after which all should be required to actually perform these operations. This drill may be given on the college campus. The instructor will see that nails and tape (or twine, preferably of white color) are available.

The standard traces and profiles and some of the alternative types of profile should be modeled to scale on the sand table, all students being required to take part. This is a useful and interesting exercise.

If a suitable terrain is available, some trenches (including at least one parallel and one approach) should be staked out for actual construction. The methods of distributing tools and assigning tasks are given in a subsequent lesson.

Book Reviews

Books on Napoleon

THE EDITOR:

By the death of Col. Herbert H. Sargent America loses her greatest military historian and leading authority on the foremost master of war, Napoleon. His death is not only a loss to America but to the world, for no American writer had a higher reputation abroad in military circles. I have been maintaining a correspondence with Colonel Sargent since 1915. In the early part of this year I wrote him for a list of what he considered the most valuable works on the Napoleonic campaigns. Coming from such an authority, I consider his answer quite valuable and cannot help but feel that other officers might be interested in knowing his opinion. It is within the realms of possibility that you might like to publish it in the columns of the JOURNAL. You will find a copy of this letter attached.

JAMES D. BASEY,
Captain, U. S. A., Retired.

DEAR CAPTAIN BASEY:

I have had for several days your recent letter but have delayed writing an answer on account of being very busy. . . .

You ask about a list of books on Napoleon's campaigns. I have so many that I hardly know what to recommend. But with a pretty good knowledge of the strategy of campaigns which you have from reading my books, I think perhaps the best ones for you to read would be Vols. III and IV of Thier's "French Revolution," translated with notes and illustrations by Frederick Shoberl, published by D. Appleton & Co., New York; and the five volumes of Thier's "Consulate and the Empire." This is in English, too, and the copies I have are published by E. Claxton & Company, of Philadelphia. As you read French fluently you might prefer to read them in French. Although I am rather inclined to think Thiers is on the whole perhaps rather unduly favorable to Napoleon at times, yet taking his history all in all, it is about the best, I think, and especially so since he is the one civilian writer who has seemed to me to have an excellent knowledge of strategy. Sloane's great work, "Life of Napoleon," so handsomely gotten up and published by the Century Company, is a good history for a civilian to read who cares and knows nothing about the strategy, but it is very unsatisfactory to a military man and is not always fair to Napoleon. Sloane himself did not understand strategy. Jomini's "Life of Napoleon," in four volumes and one volume of maps, is old, but mighty good. The four volumes of Jomini's life were published by Van Nostrand of New York and translated by Major General Halleck of our Civil War fame. These books will probably cost you considerable. I suggest that you get in touch with the War Department Library and get the librarian to send you a couple of volumes at a time.

I understand Rose's "Life of Napoleon" is a fairly good one, but I have not read it nor have I it in my library. It has been published since I wrote on Napoleon's campaigns. I do not know whether his history is satisfactory from a military point of view. Probably not, as I understand he is an Englishman. I have Dodge's "Napoleon" in two volumes. Fairly good maps in the book. The book is poorly written and very unsatisfactory from a strategical point of view, although much of it is quite interesting. R. M. Johnston's "Napoleon" is simply a short biography. Good as far as it goes. For a one volume short life of Napoleon I would recommend "Napoleon, War-

rior and Ruler," by William O'Connor Morris, published by G. P. Putnam's Sons. His "Life of Hannibal" is also fine. Also "The First Napoleon," by John C. Ropes, is good for a short life; published by Houghton Mifflin Co.

For a nonmilitary short life, "Napoleon Bonaparte," by Watson—now a new Democratic Senator from Georgia—is mighty interesting. As to the Waterloo campaign, probably a carload of books have been written about it. The four best are:

1. 1815, "Waterloo," by Henri Houssaye, one volume. My copy was translated by Arthur Emile Marne from the Thirty-first French edition. I imagine you would enjoy reading this in French. It is a very able work.

2. "The Campaign of Waterloo," by John C. Ropes. This is also an able work.

3. "The Campaign of 1815," by William O'Connor Morris, published by E. P. Dutton & Co., New York. This is a very able work. After I published my "Napoleon Bonaparte's First Campaign," I received one day a very complimentary letter about it from this man, the great Irish historian. Later he wrote me a letter begging me to write a book on Napoleon's last campaign as a sort of a companion for "Napoleon Bonaparte's First Campaign." This was about the time of the Spanish War. I wrote him that I wanted to write on the campaign of Ulm and Austerlitz and then perhaps a book on Napoleon's 1814 campaign in France and could not see my way clear to write on Waterloo at least for a long time, perhaps never. He wrote back that, if I would not do so, he would. He was an old man then. He is dead now. This history is the result. It is fine. He was an expert and understood the strategy of campaigns perfectly. In his first letter to me, after reading my first book, he said: "You beat us all easily in military history; perhaps it is because you have had a great war in the last forty years." (He referred to our Civil War.)

4. Seborne's "Waterloo Campaigns," with maps published in 1845 by Lea & Blanchard of Philadelphia. If you read the first three, however, you will have the whole meat of that campaign.

A book which you would enjoy very much, although there is very little in it relating to Napoleon's military career, is "Napoleon, the Last Phase," by Lord Rosebery. Published by Harpers. Beautifully written and the last four or five pages very, very fine. It treats of his last days and of his greatness.

You would be interested, too, in "The Corsican. A Diary of Napoleon's Life in his own Words," by R. M. Johnston.

You will also find much to interest you in "Talks of Napoleon at Saint Helena," by Elizabeth W. Latimer. Published by A. C. McClurg & Company.

Besides Napoleon's campaigns, I think every soldier who wishes to get a fair knowledge of military history, strategy and tactics of former days should read "American Campaigns" by Steele, "Operations of War" by Hamley, and "Military Memoirs of a Confederate" by E. P. Alexander. Grant's, Sherman's and Sheridan's "Memoirs" are very instructive as are also "Military Reminiscences of the Civil War, by Cox.

Very truly yours,

H. H. Sargent.

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